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RETAIL TRADE PRACTICES AND PREFERENCES FOR LATE-CROP POTATOES IN CHICAGO
AND SUBURBS, AND QUALITY ANALYSES OF POTATOES OFFERED
FOR SALE TO CONSUMERS, 1939-40

By Raymond L. Spangler,
Agricultural Economist

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INTRODUCTION

The distribution of potatoes, one of the Nation's staple food products, continues to provide a number of unsolved problems. For a number of years growers have received relatively low prices for their crops. Often the returns are reported to be below the cost of production. Shippers, wholesale dealers, and retailers have complained from time to time that low prices and keen competition have cut margins of profit to such an extent that they do not receive adequate returns for their functions in the distribution process. Along with this grower-dealer dissatisfaction many consumers have vociferously complained of the poor quality of potatoes that are being offered to them for sale in the retail stores.

This discussion deals largely with consumer reactions as reflected by statements from retail store managers in Chicago and some 30 suburbs regarding the types, quality, and size of late-crop potatoes handled by them during the 1939-40 marketing season. In addition, information relative to trade practices is given as well as the results of analyses of the quality of lots of late-crop potatoes offered for sale in the retail stores during the past season. 2/

This commodity was chosen for study because potatoes are less perishable than many other products, and because growers and shippers pack several thousand carloads annually on the basis of U. S. No. 1 grade in so-called consumer packages marked with the grade designation. Chicago was selected as the logical market in which to conduct the investigation because it is the largest market for the greatest number of the large surplus-producing States. Also, it was deemed advisable to make the study in Chicago because most of the potato marketing investigational work conducted in recent years by a number of State and Federal agencies has been in Northeastern-producing States such as Maine, New York, and Pennsylvania.

1/ The study was made possible as the result of a Congressional appropriation specifically for gathering data and obtaining information relative to possibilities of making the United States standards for fresh fruits and vegetables more adaptable to consumer use.

2/ W. W. Morrison and Harry M. Branch, Assistant Marketing Specialists, Agricultural Marketing Service, interviewed the retail store managers in connection with the study and made the analyses of potatoes in the retail stores.

PLAN OF PROCEDURE

With the limited funds available it was decided that the most comprehensive picture could be obtained through interviews with individual store managers whose ideas naturally could be expected to reflect those of their customers. Also in a study of this sort it was believed that analyses of the lots of potatoes in the stores should be made in order to determine the quality of potatoes that were offered for sale to consumers. Such analyses provide a check upon the statements of preferences and objections voiced by the retail managers.

This plan called for the services of persons well acquainted with potato marketing methods and those who were thoroughly versed in the requirements and application of the United States standards for potatoes. Accordingly, two regularly employed Federal market inspectors with the above qualifications were detailed to act as enumerators and to analyze lots offered for sale at the stores.

Consequently by direct interview, store managers were asked to answer questions and to give opinions relative to certain trade practices, preferences and objections to various qualities in potatoes that they handle. The work, including analyses of lots of potatoes offered for sale in the stores was started the last of September 1939 and continued until July 1, 1940. After April 30, however, the study was confined to the new 1940 crop of potatoes, the results of which are reported in a separate publication entitled "Retail Trade Practices and Preferences for Early-Crop Potatoes in Chicago, and Quality Analyses of Potatoes Offered for Sale to Consumers, 1940."

Every effort possible was made to make the study representative of average conditions. From various sources it was estimated that corporate chain stores in the Chicago area distributed about 30 percent of the potatoes, although they operate only about a fifth of the stores. Thus, it was aimed to visit enough chain stores to make up about 30 percent of the total with the remainder consisting of voluntary chain and independent stores. It is estimated that there are in the neighborhood of 8,000 stores in Chicago and its suburbs that retail potatoes, of which about 1,700 are operated by corporate chain store organizations; the remainder are voluntary chain and independent stores. From September 1939 through April 1940 a total of 1,165 stores were visited which included 703, or about 60 percent, independent stores; 327, or 28 percent corporate chain stores, and 135, or 12 percent, voluntary chain stores.

A newspaper's classification of the city into various rental areas was used as a guide in selecting a representative number of stores in the various income areas. This classification was published in 1930 but since that time it has been estimated that rental values have decreased about 35 percent. The following classification shows the approximate average monthly rental value of rented homes combined with owned homes for each area in 1930 and the adjusted 1940 values:

<u>1930 Approximate Value</u>	<u>Adjusted 1940 Approximate Value</u>
Rental Area	Rental Area
A - Over \$75	A - Over \$50
B - \$55 to \$75	B - \$38 to \$50
C - \$45 to \$55	C - \$29 to \$38
D - \$35 to \$45	D - \$23 to \$29
E - Under \$35	E - Under \$23

There is overlapping within districts, of course, but for the purpose of this study the above figures are not important. In the classification of a store as belonging to these various rental areas, the enumerators used their best judgment after sizing up the class of merchandise carried by the store, type of neighborhood, class of customers, and other factors. Thus, for the purposes of the study, stores rated as being located in the various rental areas were classified as follows:

- A - Stores serving highest income customers
- B - " " above average income customers
- C - " " average income customers
- D - " " below average income customers
- E - " " lowest income customers

The number of stores visited were classified as belonging to the various income groups or rental areas as follows:

- A - 119 stores
- B - 267 stores
- C - 440 stores
- D - 253 stores
- E - 86 stores

Aside from gathering data relative to the possibilities of making the United States standards for potatoes more adaptable to consumer use the study discloses information which suggests possible improvements in the quality of potatoes offered for sale to consumers as well as general improvement in potato marketing methods.

It is believed that the study was made under as average conditions as possible in the circumstances and that the opinions rendered by retail store managers represent a fair cross-section of the opinions of all retail store managers in the Chicago area. It is also believed that the results of the analyses of lots of potatoes in the stores are representative of the quality offered for sale in all stores throughout the marketing season.

The numerical results of retailers' statements and analyses of lots of potatoes are summarized in the tables, but these figures are not so important as are the facts indicated by them. Adverse criticisms and objections to certain qualities in potatoes from particular producing States are reported only in the hope that they may prove beneficial to the industry in helping to bring about improvement and not to reflect on the quality of potatoes from any State.

RETAIL TRADE PRACTICES

Methods of Obtaining Supplies

Corporate chain-store managers, of course, exercise but a small amount of control over the quality and types of potatoes that they offer to consumers. Buyers for the chains usually purchase supplies in carload lots, and most transactions are made directly through shippers at shipping points or through subsidiary or other corporations that deal directly with shippers. The chain-store

manager, therefore, is concerned only with keeping on hand a supply of the types in demand, and he offers for sale whatever quality is delivered to him from the central warehouses.

The majority of the voluntary chain-store managers in the Chicago area, on the other hand, buy independently the same as unorganized independent retailers, and therefore exercise direct control in obtaining their potato supplies. An effort was made to determine through voluntary chain and independent retail managers how they obtained their supplies. Of the 657 managers who answered this question, approximately 47 percent stated that they or one of their representatives personally inspect the potatoes before they make their purchases. The majority of these retailers go to the stores of the wholesalers in either the South Water, Randolph Street, or South State Street markets. A good many, however, obtain their supplies from peddlers or trucking jobbers who truck them to the stores for the inspection of the retailers.

About 53 percent of the retailers who commented upon their buying methods stated that they do not inspect the potatoes personally but order by telephone through a wholesaler or jobber in whom they have confidence. Many said they bought from dealers with the privilege of returning stock that they did not regard as satisfactory. Many retailers stated that they had dealt with the same concern on this basis for a long period of years.

Checking Weights Upon Receipt of Potatoes

When it was convenient to do so, the voluntary chain and independent retailers interviewed were questioned regarding their practices of checking weights of their purchases upon receipt at the stores. Of a total of 387 managers replying to this question approximately 59 percent stated that they did not weigh the sacks upon receipt at the store; 17 percent said that they occasionally checked the weights and only 24 percent replied that they made it a general practice to check weight.

Of the 179 retailers who commented upon the weights of their purchases, about 44 percent said that they usually found the weights of sacks agreeing very closely with the billing weights; 45 percent found that their purchases of 100-pound sack lots were usually from 1 to 3 pounds less than 100 pounds, while 11 percent thought their purchases were from 3 to 5 pounds underweight. The retailers were not particularly critical of the shortage in weights of sacks unless it was excessive. Most of them recognized that there is likely to be some shrinkage during transit and handling and as long as the underweight was not over 1 or 2 percent they were inclined to regard it as a natural condition. Some dealers reported that they found more underweight in potatoes shipped from the North Central States than in western-grown potatoes. Several stated they generally found that bags of Idaho and Colorado potatoes contained the full weight marked on the package.

Volume Handled by Various Classes of Retailers

On the average, weekly potato sales of chain stores in Chicago and suburban areas were much larger than the weekly volumes handled by the independent or voluntary chain stores. As shown in table 1, roughly a third of both independent and voluntary chain-store managers reported that they handled 500 pounds of potatoes or less per week whereas only 1.5 percent of the chain-store managers

reported handling such a small volume. The percentage of chain stores that handle from 6 to 10 sacks per week is also smaller than for the independent and voluntary chain stores. Nearly 30 percent of the chain units distributed from 11 to 15 sacks per week as compared with 13 percent and 9 percent for the independent retailers and voluntary chain stores, respectively.

Table 1.- Volume of late-crop potatoes handled per week as reported by 1,165
retailers in Chicago and suburbs, September 1939 to April 1940

Number of cwt.: handled per week	As reported by -						All retailers interviewed	
	Independent retailers		Chain store managers		Voluntary chain- store managers			
	Number	Per- cent	Number	Per- cent	Number	Per- cent	Number	Per- cent
Less than 1	4	0.6	---	---	1	0.7	5	0.4
1 to 5	255	36.3	5	1.5	45	33.3	305	26.2
6 to 10	210	29.9	65	19.9	50	37.1	325	27.9
11 to 15	91	12.9	97	29.7	12	8.9	200	17.2
16 to 20	37	5.3	40	12.2	7	5.2	84	7.2
21 to 25	18	2.6	28	8.6	1	.7	47	4.0
26 to 30	15	2.1	11	3.4	---	---	26	2.2
31 to 40	17	2.4	13	4.0	---	---	30	2.6
41 to 50	16	2.3	8	2.5	---	---	24	2.1
51 to 60	5	.7	6	1.8	2	1.5	13	1.1
61 to 70	1	.1	5	1.5	---	---	6	.5
71 to 80	1	.1	3	.9	2	1.5	6	.5
81 to 90	4	.6	2	.6	---	---	6	.5
91 to 100	10	1.4	2	.6	---	---	12	1.0
101 to 110	1	.1	1	.3	---	---	2	.2
111 to 125	---	---	2	.6	---	---	2	.2
126 to 150	2	.3	---	---	---	---	2	.2
175 to 200	2	.3	---	---	---	---	2	.2
250 to 300	2	.3	1	.3	---	---	3	.2
No reply	12	1.7	38	11.6	15	11.1	65	5.6
Total	703	100.0	327	100.0	135	100.0	1,165	100.0

There were some independent and chain-store managers, however, who reported that they handled a considerable volume per week, as for example, 10 independent retailers stated that it took from 90 to 100 sacks of 100 pounds to supply their customers each week. Three of the retailers reported a sales volume of between 250 and 300 sacks per week, which is almost a carload.

Considering the retailers as a whole, the results of the interviews with regard to volume handled indicates that somewhat more than half of all retailers in the Chicago area use 10 sacks or less per week, with about a fourth of the stores distributing from 1 to 5 sacks per week, and another fourth from 6 to 10 sacks per week. About 17 percent reported a volume of from 11 to 15 sacks, and 7 percent a volume of 16 to 20 sacks. Only a comparatively small number of retailers distributed over 20 sacks per week.

Reported volume handled by retailers in different rental areas is shown in table 36. Study of the table for differences in volume handled by retailers located in various rental areas seems to indicate that the stores handling the smaller weekly volumes are located in the lower rental districts. For example, less than a fourth of the independent retailers in rental area A had the small volume of from 1 to 5 sacks per week. The proportion of stores handling potatoes

at this rate seems to increase in each succeeding lower rental area and reaches 68.5 percent in rental area E. The same trend is noted for the other types of retail stores.

Volume Handled in Consumer Packages

The number of retailers that handled potatoes in so-called consumer packages, either packed at shipping points or by receivers in Chicago, are shown in tables 2, 3, 4, and 37. Most of the potatoes were packed in 10-pound sacks although there were a few lots packed in 5-, 15-, and 25-pound sizes.

Table 2.- Number of consumer packages 1/ of late-crop potatoes handled per week as reported by 327 chain-store managers in Chicago and suburbs,
September 1939 to April 1940

Number of packages handled	: Number reporting	: Percent
5 to 10	:	3 : 0.9
11 to 20	:	14 : 4.3
21 to 30	:	12 : 3.7
31 to 40	:	8 : 2.5
41 to 50	:	15 : 4.6
51 to 60	:	4 : 1.2
61 to 70	:	8 : 2.5
71 to 80	:	7 : 2.1
81 to 90	:	4 : 1.2
91 to 100	:	7 : 2.1
101 to 125	:	7 : 2.1
126 to 150	:	7 : 2.1
151 to 200	:	10 : 3.1
201 to 250	:	6 : 1.8
251 to 300	:	2 : .6
301 to 400	:	2 : .6
401 to 500	:	1 : .3
501 to 600	:	1 : .3
Handled but no reply to volume	:	53 : 16.2
Formerly handled but discontinued	:	75 : 23.0
Never handled or do not handle at present	:	75 : 23.0
No reply to question	:	6 : 1.8
Total	:	327 : 100.0

1/ Mostly 10-pound, some 25-, 15-, and 5-pound packages.

Table 3.- Number of consumer packages 1/ of late-crop potatoes handled per week as reported by 703 independent retailers in Chicago and suburbs,
September 1939 to April 1940

Number of packages handled	: Number reporting	: Percent
5 to 10	:	1 : 0.1
11 to 20	:	3 : .5
50 to 60	:	2 : .3
90 to 100	:	1 : .1
125 to 150	:	1 : .1
Handle but no reply to volume	:	19 : 2.7
Formerly handled but discontinued	:	108 : 15.4
Never handled	:	556 : 79.1
No reply to question	:	12 : 1.7
Total	:	703 : 100.0

1/ Mostly 10-pound, some 25-, 15-, and 5-pound packages.

Table 4.- Number of consumer packages 1/ of late-crop potatoes handled per week as reported by 135 voluntary chain-store managers in Chicago and suburbs, September 1939 to April 1940

Number of packages handled	: Number reporting	: Percent
10 to 20	:	1 : 0.7
21 to 30	:	3 : 2.3
90 to 100	:	1 : .7
Handle but no reply to volume	:	9 : 6.7
Formerly handled but discontinued	:	44 : 32.6
Never handled	:	76 : 56.3
No reply to question	:	1 : .7
Total	:	135 : 100.0

1/ Mostly 10-pound, some 25-, 15-, and 5-pound packages.

It is surprising to note that only a small percentage of either independent or voluntary chain stores handled potatoes in consumer packages. Only 27 independent retailers, or 4 percent, out of the 703 interviewed, and 14 voluntary chain stores, or 10 percent, out of the 135 visited, were handling potatoes in consumer packages. By far the larger proportion of the independent retailers as well as the voluntary chain-store managers reported that they never had handled potatoes in consumer packages. Many retailers reported that they had tried them but had discontinued stocking them for various reasons.

Thus, most of the potatoes packed in consumer packages distributed in the Chicago area are retailed through the corporate chain stores. More than half of the chain-store managers interviewed, carried consumer packages of potatoes that were packed either by potato shippers or receivers. Seventy-five chain-store managers reported that they formerly stocked potatoes in consumer packages but discontinued them for some reason or a combination of reasons.

As shown in table 37, practically all the retailers, whether independent, voluntary, or corporate chain, that handled potatoes in consumer packages, were located in the higher rental areas. No stores located in rental area E were handling potatoes in consumer packages.

There was a decided tendency for the distribution of potatoes in consumer packages to be limited to relatively few stores that handled these packages in considerable volume. As shown in table 2, there were only 36 chain-store managers who reported a volume distribution of 100 or more packages per week. This sales information may be somewhat incomplete as 53 of these store managers did not report their volume of business in this type of package.

Of all the retailers interviewed, nearly one-fifth stated that at some time or other they had stocked potatoes packed in consumer packages but had discontinued them. The retailers who discontinued the handling of potatoes in consumer packages gave various reasons for doing so and these are summarized in table 5.

Table 5.- Reasons given for discontinuing the handling of late-crop potatoes in consumer packages, as reported by 227 retailers ^{1/} in Chicago and suburbs, September 1939 to April 1940

Reason given for not handling	: Number	: Percent
Quality poor or could not depend on uniform quality.....	: 36	: 15.9
Could not depend on uniform quality and size.....	: 3	: 1.3
Price too high.....	: 43	: 18.9
Customers want to see what they are buying.....	: 41	: 18.1
Did not sell readily.....	: 20	: 8.8
Size of package too large.....	: 14	: 6.2
Size of package too large and range in size of potatoes too great.....	: 2	: .9
Demand for size and number of pounds too variable.....	: 10	: 4.4
Shrinkage too heavy.....	: 14	: 6.2
Short weights or weights not dependable.....	: 9	: 4.0
Range of size of potatoes too great.....	: 3	: 1.3
Potatoes in mesh bags showed light-burn before could be sold	: 5	: 2.2
Not enough margin for retailer.....	: 2	: .9
Wholesaler stopped calling.....	: 1	: .4
Did not have room for display.....	: 1	: .4
No reason given.....	: 23	: 10.1
Total.....	: 227	: 100.0

^{1/} Included 108 independent retailers, 75 chain-store managers, and 44 voluntary chain-store managers.

About 16 percent of the retailers discontinued stocking consumer packages because they either found the quality to be poor or they could not depend upon getting uniform quality on repeat orders. But about one-fifth of the stores no longer carried potatoes in consumer packages because they found that their customers would not pay the premium in price for this type of package when the same quantity of potatoes could be bought in bulk at a lower price. About the same proportion of the retailers said that they discontinued carrying consumer packages because the majority of their customers preferred to see what they were buying and would not take the closed consumer packages. It is not possible, of course, to tell whether this was due to dissatisfaction with the quality of previous purchases of closed packages or to the practice of many housewives of examining the quality of potatoes before buying them. Several retailers reported that the majority of customers preferred a unit smaller than 10- or 15-pound packages usually offered for sale and a number of others stated that the demand for certain sizes of potatoes and the number of pounds were so variable that they could not handle consumer packages to advantage. Fourteen retailers said that they were forced to discontinue stocking consumer packages because their loss from shrinkage was too heavy. Nine dealers complained that weights were short or not dependable and some had trouble with the local weights and measures departments.

Methods of Serving Customers

An interesting phase of retail potato distribution in Chicago and suburban areas concerns the methods that the stores use in serving their customers. These methods are summarized in table 6. Some retailers use only one method of serving customers; that is, preparation of the purchase in the presence of the customer. In most stores, bins of potatoes are available from which the customer may, if she likes, pick out the potatoes she wants. In a majority of such stores, however, employees give the customer little, if any, opportunity actually to select the purchase, although they do, in varying degrees, attempt to select for the customer something approaching the sizes and quality requested. Many stores, particularly the chain stores, prepare packages of potatoes and have a supply on hand before the customer enters. Some, as previously stated, also purchase branded consumer packages which have been packed by shippers at shipping points or by receivers in the markets.

The predominating method of serving customers is by a sales clerk who selects and weighs out the potatoes in the presence of the customer. About 85 percent reported that this method predominates in their stores. The practice of serving customers with packages previously prepared in the store from bulk stock was the principal method followed by about 10 percent of the stores and was a much more common practice in the chain and voluntary chain stores, than in the independent stores.

When considering practices in stores catering to different income groups, it is noted that in chain stores the practice of offering customers prepared packages is less common in those located in high rental areas, but is more general in the stores located in lower rental areas. This might indicate that consumers with higher incomes are more discriminating in their purchases and wish to see what they are buying. On the other hand, in the independent and voluntary chain stores, the practice of serving customers with prepared packages of potatoes was most common in the higher rental areas.

This is probably because many of the independent and voluntary chain stores, serving the higher income groups, do a charge and delivery business with most of their customers on telephone orders. The potatoes are usually packaged in advance but are, in a majority of cases selected for quality and size to please their regular customers whose continued patronage of the store is dependent upon the degree in which they can rely on the grocer.

Another striking difference between types of stores as to the method of serving customers is that in only the chain stores were customers served, to a large extent with consumer packages packed by shippers or receivers. Of 327 chain-store managers, about 6 percent stated that this was their chief method of service. Most of these managers stated that they had pushed the sale of such packages and were able to build up consumer demand for such a package.

Range and Predominating Size of Purchase

The retailers interviewed were asked to give the range in size of purchase of potatoes by consumers and the purchase unit that was most common. Almost all the 1,165 retailers interviewed replied to the question. The answers were so variable, particularly among the independent retailers, that it is not feasible to show the results in tabular form.

Table 6.- Predominating methods of serving customers late-crop potatoes as reported by 1,165 retailers in Chicago and suburbs, September 1939 to April 1940

Rental area and class		Consumer packages prepared by shipper or receiver		Packages prepared by clerk previous to customers' entry		Customers' presence		Retailers serve themselves		No reply		All retailers interviewed	
No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Independent retailers													
A	---	---	13	22.8	43	75.4	1	1.8	---	57	100.0		
B	---	---	6	6.1	91	91.9	2	2.0	---	99	100.0		
C	---	---	4	1.4	282	96.2	6	2.1	1	0.3	293	100.0	
D	---	---	---	---	174	96.1	7	3.9	---	181	100.0		
E	---	---	---	---	61	83.6	12	16.4	---	73	100.0		
Total			23	3.3	651	92.6	28	4.0	1	.1	703	100.0	
Chain-store managers													
A	2	4.9	3	7.3	33	80.5	3	7.3	---	41	100.0		
B	17	10.4	22	17.6	87	69.5	3	2.4	---	125	100.0		
C	3	3.1	26	26.5	67	68.4	1	1.0	1	1.0	98	100.0	
D	3	5.6	18	33.3	33	61.1	---	---	---	54	100.0		
E	---	---	6	66.7	2	22.2	1	11.1	---	9	100.0		
Total	21	6.4	75	22.9	222	67.9	8	2.5	1	.3	27	100.0	
Voluntary chain-store managers													
A	---	---	13	61.9	8	38.1					21	100.0	
B	---	---	7	16.3	36	83.7					43	100.0	
C	---	---	5	10.2	44	89.8					49	100.0	
D	---	---	1	5.6	17	94.4					18	100.0	
E	---	---	---	---	4	100.0					4	100.0	
Total			26	19.3	109	80.7					135	100.0	
Total all areas	21	1.8	124	10.6	982	84.3	36	3.1	2	.2	2:1,165	100.0	

In general, the replies show that the consumer in Chicago and suburbs does not purchase on the average more than 15 pounds of potatoes at any one time. Nearly all grocers said that the range in size of purchases was between 1 and 15 pounds and only a few said that they had a small number of customers who purchased in 100- or 50-pound sack lots.

The majority of the managers of the chain- and voluntary chain-stores reported that the most common quantity purchased at one time was either 5, $7\frac{1}{2}$, 10, or 15 pounds. About 15 percent of the retailers in these groups offering information on this point gave 5 pounds as the predominating size of purchase in their stores, 4 percent $7\frac{1}{2}$ pounds, 30 percent 10 pounds, and 9 percent 15 pounds. In addition, 30 percent of these grocers stated that combinations of two or more of these purchase units were predominant in their stores. One would expect the purchase units to be in multiples of 5 pounds or half a peck in these classes of stores, as it is customary for the chains and voluntary chains to follow pricing methods in terms of certain price units and to vary the number of pounds of potatoes offered at the price unit according to cost prices and administrative sales policies. The chain stores apparently find it more convenient to quote the price in multiples of 5 or on the basis of a half peck. This enables the managers to prepare packages in advance of sale, which as shown is not the principal method of serving customers in most of these stores, but is a common practice.

Only about one-third of the independent retailers stated that the most common units of purchase were 5, $7\frac{1}{2}$, 10, or 15 pounds in their stores. In almost one-half of the independent stores visited there was little tendency for the individual purchases to fall around certain standard quantities. There were all sorts of quantities and combinations between 1 and 15 pounds but none seemed to be particularly outstanding for the group as a whole. There were some differences, however, in the unit of purchase between stores located in the different rental areas. The data indicate that customers with low incomes purchase potatoes in smaller unit quantities than those with higher incomes. For example, 45 retailers reported that the most common unit of purchase in their stores was 3 pounds. Ten of them were located in sections classed as rental area C, 16 in rental area D, and 19 in rental area E. There were no retailers in rental areas A and B who reported selling appreciable quantities of potatoes in such small units. Moreover, of 201 independent retailers whose usual unit sale was 5 pounds or less, only about 11 percent were located in the higher rental areas.

The enumerators noticed that many of these stores in the lower rental areas catered largely to consumers with low incomes who resided in nearby apartment and rooming houses where facilities are inadequate for keeping potatoes. Some of these stores were located in Negro districts where per-capita potato consumption is very low.

Practice of Discounting Potato Prices

After the study was well under way it was noticed that some retailers made a practice of sorting out defective potatoes or those of undesirable sizes that accumulated in their bins and offering them at a lower retail price. Most retailers stated that they were forced to discount prices on these potatoes in order to move them.

Approximately 57 percent of the retailers interviewed on this point reported that they make a practice of selling some of their potato supplies at a discount (table 7). As to the quantity estimated to be offered at a discount, these dealers submitted estimates from less than 1 to 25 percent although about four-fifths gave estimates of 5 percent or less.

Table 7.- Estimate of percentage of late-crop potatoes offered at a discount as reported by 290 retailers in Chicago and suburbs, September 1939 to April 1940

Offered at discount	As reported by -			Total retailers reporting
	Independent retailers	Chain-store managers	Voluntary chain-store managers	
	Number	Number	Number	
Less than 1	2	12	1	15 : 5.2
1	12	14	1	27 : 9.3
1 to 2	3	4	---	7 : 2.4
2	13	7	2	22 : 7.6
2 to 3	5	4	3	12 : 4.2
2 to 4	---	1	---	1 : .3
3	4	8	---	12 : 4.2
3 to 4	---	---	1	1 : .3
3 to 5	1	1	---	2 : .7
4	1	4	---	5 : 1.7
4 to 5	1	---	---	1 : .3
5	19	6	1	26 : 9.0
5 to 6	1	---	---	1 : .3
5 to 10	2	1	---	3 : 1.1
6	3	---	---	3 : 1.1
7	2	---	---	2 : .7
7 to 8	---	1	---	1 : .3
8	---	1	---	1 : .3
10	9	4	1	14 : 4.9
10 to 15	---	1	---	1 : .3
15	3	4	---	7 : 2.4
20	1	---	---	1 : .3
25	---	1	---	1 : .3
None	53	46	25	124 : 42.8
Total	135	120	35	290 : 100.0

Retailers' Losses Due to Decay and Other Badly Defective Potatoes

In handling from shipper to the retail stores, some potatoes, of course, are rendered worthless through decay or other deterioration or through rough handling. For example, a common complaint registered against the long type Russet Burbank potatoes was that a rather large number were crushed or broken when they arrived in the stores. Also in the ordinary process of grading and packing, an occasional badly defective tuber escapes the eyes of the sorters.

In order to get an idea of losses from potatoes that are unsalable, retailers were asked to estimate the percentage of the potatoes they had to throw away.

As shown in table 8, about a fifth of the retailers estimated their stock losses from "throw-outs" to be less than 1 percent, a fourth from 1 to 2 percent, and about two-fifths from $2\frac{1}{2}$ to 5 percent. One store manager in 10 stated that losses on this account ranged from 5 to 10 percent. There were a few who placed their losses at from 10 to 25 percent of the delivered weights they received but such estimates seem rather high considering the analyses of the quality of potatoes available in their stores.

Table 8.- Estimated percentage of losses due to decay and other badly defective potatoes as reported by 1,101 retailers in Chicago and suburbs, September 1939 †, April 1940

Estimated percent of loss	As reported by -			Total retailers reporting
	683 independent retailers	296 chain-store managers	122 voluntary: chain-store managers	
None	2.2	0.3	1.6	1.6
1 or less	17.9	23.0	27.1	20.3
Over 1 to 2	21.5	29.7	27.1	24.3
Over 2 to 5	46.4	37.2	36.1	42.8
Over 5 to 10	10.1	9.5	7.3	9.6
Over 10 to 25	1.9	.3	.8	1.4
Total	100.0	100.0	100.0	100.0

RETAILERS' PREFERENCES AND OBJECTIONS

Preference for Late-Crop Potatoes by States of Origin

For general cooking purposes, about three-fourths of the Chicago retailers included in the study showed a decided preference for red-skinned potatoes from Colorado and Nebraska during the 1939-40 marketing season. As shown in table 9, more than a third of the managers said they preferred Colorado red-skinned potatoes, whereas 21 percent indicated Nebraska red potatoes as their first choice. About 19 percent named both Colorado and Nebraska as their first choice as a source of supply for potatoes. Nine percent of the retailers did not give a State preference but merely indicated that they preferred red potatoes for their trade.

The principal reason given was the superior cooking quality of Colorado McClures and Nebraska Bliss Triumphs. The striking development the past season was the rapid growth in popularity of Nebraska Bliss Triumphs. The attractive red color and the excellent cooking quality were assigned as the reasons for the popularity of this potato during the past season. Another reason given for the rise in popularity of Nebraska potatoes was that most of them came to market clean this year. Many growers and shippers have adopted the practice of either washing or brushing their potatoes and as a result the general appearance is materially improved.

Table 9.- Preferences for late-crop potatoes for general cooking purposes from various States by 1,165
retail store managers 1/, Chicago and suburbs, September 1939 to April 1940

Retailers:		Preference expressed for potatoes from -										No State named:		No	No
Rental area	inter-viewed	Colo.	Nebr.	Colo.	& Minn.	Wis.	N.Dak.	Maine	Mich.	Idaho	But prefer red:	prefer red:	reply	Preference	Preference
		Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-
		cent	cent	cent	cent	cent	cent	cent	cent	cent	cent	cent	cent	Percent	Percent
A	119	37	26	26	26	26	26	26	26	26	26	26	26	8	2
B	267	38	17	25	25	25	25	25	25	25	25	25	25	2	1
C	440	38	25	19	19	19	19	19	19	19	19	19	19	8	6
D	253	34	18	13	13	13	13	13	13	13	13	13	13	2	1
E	86	15	12	7	7	7	7	7	7	7	7	7	7	9	3
Total	1,165	35	21	19	2	3	1	3	3	1	9	9	5	1	1

1/ Independent retailers 703, chain-store managers 327, and voluntary chain-store managers 135.

In former years retailers reported that Colorado McClures have held the spotlight but during the past season the cooking quality of this variety was reported to be below average and many lots lacked the attractive red color which seems to appeal to the eyes of Chicago consumers. Also the shape of the potatoes in many lots was not as desirable as in former years.

It is interesting to note that potatoes from other northern potato-growing States were selected as first choice by managers of stores in the lower rental areas. The reasons they gave for this selection were that their customers, whose incomes in these areas are lower, generally select their potatoes on the basis of getting the largest quantity of food for their money. Therefore, such retailers meet this situation by choosing the lower-priced potatoes from nearby States such as Michigan, Wisconsin, Minnesota and North Dakota for these customers. A number of retailers in the lower rental areas selected Idaho as their first choice for potatoes for general cooking purposes. The reason given by these managers in preferring such a relatively high-priced potato was that their customers had become accustomed to using Russet Burbanks for general cooking purposes in preference to lower-priced varieties from other States.

Idaho has little competition in the choice for baking potatoes. As is shown in table 10, almost all the retailers interviewed named the Idaho potato as their first choice for this use by their customers.

Table 10.- Preferences for late-crop potatoes for baking purposes from various States by 1,165 retail-store managers 1/, Chicago and suburbs, September 1939 to April 1940

Rental Number:	Preference expressed for potatoes from -	No	No	
area inter-	Idaho	Colorado	prefer-	reply
viewed:	:	:	ence	:
A	119:	100	---	---
B	267:	100	---	---
C	440:	99	---	1
D	253:	97	---	2
E	86:	78	1	12
Total	1,165:	97	---	2

1/ Independent retailers 703, chain-store managers 327, and voluntary chain-store managers 125.

Retailer preferences for late-crop potatoes from various States are shown separately in tables 38, 39, and 40 for independent retailers, corporate chain, and voluntary chain managers.

Variety or Type Preferences

The majority of the retailers in the Chicago area are unable to identify potatoes by varietal name. When questioned as to the varieties they preferred to handle most of them answered by designating color of the skin, shape and color, or simply by naming the State of origin.

As shown in table 11, only a small percentage of retailers named McClure or Bliss Triumph as a choice for varieties but named "Reds" or "Red Potatoés" as their first, second, or third choice. For a choice of Cobbler, Rural, and other round varieties, most retailers designated them as "Whites," "Wisconsins," or "Michigans." Although the choice for Russet Burbank is indicated by the correct varietal name in the table, a large percentage of retailers designated the choice by naming the State of origin - Idaho.

Table 11.- Preference expressed for late-crop potatoes by varieties or types by 1,165 retail-store managers 1/
in Chicago and suburbs, September 1939 to April 1940

Variety or type preference	As reported by -						All retailers interviewed					
	Independent retailers: Chain-store managers: Voluntary chain-store: managers						First : Second: Third: First: Second: Third : First : Second : Third choice : choice:choice:choice:choice:choice:choice : choice : choice					
	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent	Per- cent
Red potatoes	76.1	14.4	2.9	51.7	20.2	11.9	71.1	11.1	---	68.7	15.6	5.1
Russet Burbank	8.3	2/78.0	9.3	17.8	3/65.1	12.5	11.9	4/73.3	13.3	5/73.8	10.7	
Round White	11.4	3.0	46.2	11.9	3.1	42.2	5.9	3.0	31.9	10.9	3.0	43.4
Cobbler	7	.6	2.0	9.8	2.1	9.5	---	1.5	1.5	3.2	1.1	4.0
McClure	2.4	.1	.1	6.1	3.7	3.7	11.1	4.5	.7	4.5	1.7	1.2
Bliss Triumph	.4	.1	.1	1.2	3.7	1.2	---	5.9	4.5	.6	1.8	.9
No reply	.7	3.8	39.4	1.5	2.1	19.0	---	7	48.1	.8	3.0	34.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1/ Independent retailers 703, chain-store managers 327, and voluntary chain-store managers 135.

2/ Although here noted as second choice, 8 percent of the retailers rated Russet Burbanks even with red potatoes.

3/ Although here noted as second choice, 12 percent of the retailers rated Russet Burbanks even with red potatoes.

4/ Although here noted as second choice, 7 percent of the retailers rated Russet Burbanks even with red potatoes.

5/ Although here noted as second choice, 9 percent of the retailers rated Russet Burbanks even with red potatoes.

In reality the replies received from the retailers as to varietal preferences practically duplicated the replies received from the question as to State preference. Nearly 69 percent of the total number of retailers interviewed indicated preference for red-skinned potatoes, having in mind the Bliss Triumph and McClure varieties. Only about 5 percent gave the name of these varieties. Approximately 74 percent of the retailers interviewed designated Idaho potatoes or Russet Burbank as their second choice for variety although about 9 percent of them rated Russet Burbank equal to Red potatoes. It is not a really fair comparison to list the Russet Burbank as a majority second choice as this variety enjoys almost unanimous choice for a baking variety as shown in table 10. The majority of the retailers listed it as a second choice for variety because the volume of Red potatoes or other varieties sold for general cooking purposes generally exceeds the volume of Russet Burbanks sold, which are used mostly for baking purposes.

There is no material difference among the three classes of retailers as to preferences for variety or type.

Varietal preferences shown by the retailers appear to be explained in part by the income levels of the persons patronizing them. The majority of the retailers in the higher rental areas, A and B, indicated "Red Potatoes" as their first choice, whereas in the lower rental area, E, only a small percentage named this type as first choice. In contrast no retailers in rental area A and only a very small percentage of them in rental areas B and C named "Round Whites" as their first choice, whereas in rental areas D and E a large proportion of the stores indicated "Round Whites" as their first choice. This shows that in the higher income areas consumers are willing to pay the higher prices for McClures and Bliss Triumphs; whereas those in the lower income areas purchase the cheaper Cobblers and other varieties of Round Whites produced in nearby States.

Moreover, the proportion of retailers who indicated preference for the relatively high-priced Russet Burbanks is largest in rental area A and decreases in the lower rental areas.

Defects Considered Most Serious

Since consumers and retailers do not generally deal in potatoes on the basis of grades, neither group is very well versed in the various types of defects of late-crop potatoes. Nevertheless, an attempt was made to find out from the retailers the qualities in potatoes that they considered most objectionable from the standpoint of selling to consumers.

As shown in table 12, mechanical injury (often termed cuts, bruises, or broken potatoes) is regarded as the most serious defect of potatoes received in the stores. This kind of injury was mentioned as the most serious one by nearly 69 percent of the retailers interviewed because it is the defect most commonly found in potatoes and is the one that causes the most complaints from customers. Homemakers complain about such potatoes principally because of the waste involved in preparing them for table use.

Dirt is undoubtedly the next most serious defect of potatoes received in the Chicago area although it is listed in table 12 as the most serious defect by only about 1 percent of the retailers and second most serious by slightly more

Table 12.—Defects considered most serious in late-crop potatoes as reported by 1,165 retail store managers 1/ in Chicago and suburbs, September 1939 to April 1940

Defects	As reported by -										All retailers interviewed										
	Independent retailers: Chain-store managers: Voluntary chain-store:					Managers					All retailers										
	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	Per-	
	cent	cont	cent	cent	cent	cent	cent	cent	cent	cent	cent	cent									
Mechanical injury	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	Most : Second: Third	
Potatoes cook black	67.0: 5.0:	0.3:	70.0:	11.0:	1.5:	64.4:	10.4:	0.7:	63.8:	7.3:	0.7:	63.8:	7.3:	0.7:	63.8:	7.3:	0.7:	63.8:	7.3:	0.7:	63.8:
Potatoes cook mushy	5.7: 14.7:	1.3:	9.2:	22.9:	5.2:	3.2:	19.3:	1.5:	7.0:	17.5:	1.5:	7.0:	17.5:	1.5:	7.0:	17.5:	1.5:	7.0:	17.5:	1.5:	7.0:
Dirty 2/	11.4: 12.2:	1.0:	3.7:	12.2:	2.2:	6.7:	8.9:	2.3:	4.5:	11.8:	2.3:	4.5:	11.8:	2.3:	4.5:	11.8:	2.3:	4.5:	11.8:	2.3:	4.5:
Soft rot	.4: .9:	.5:	1.9:	3.6:	2.8:	.7:	3.0:	1.5:	1.5:	3.3:	1.5:	1.5:	3.3:	1.5:	1.5:	3.3:	1.5:	1.5:	3.3:	1.5:	1.5:
Dry rot	.3: 1.2:	.1:	5.2:	3.7:	1.5:	1.5:	7.7:	.7:	.7:	1.8:	.7:	.7:	1.8:	.7:	.7:	1.8:	.7:	.7:	1.8:	.7:	1.8:
Scab	1.3: 1.0:	.1:	1.2:	2.2:	.6:	5.2:	5.2:	3.0:	.7:	1.7:	.7:	.7:	1.7:	.7:	.7:	1.7:	.7:	.7:	1.7:	.7:	1.7:
Air cracks	1.6: .7:	--:	.9:	.6:	.3:	--:	.7:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
Hollow heart	.3: .4:	.4:	.1:	.6:	--:	.6:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
Sunburn	.3: .3:	.3:	.3:	--:	--:	--:	--:	.7:	1.5:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
Misshappen	--:	.1:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
Potatoes too large 3/	.1:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
Wireworm injury	.3: .3:	.1:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
Growth cracks	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:	--:
No reply	15.9: 62.7:	96.3:	6.7:	37.9:	84.7:	11.9:	51.8:	90.4:	12.9:	54.5:	92.4:	92.4:	92.4:	92.4:	92.4:	92.4:	92.4:	92.4:	92.4:	92.4:	92.4:
Total	100.0: 100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:

1/ Independent retailers 703, chain-store managers 327, and voluntary chain-store managers 135.

2/ In addition to this classification of dirty potatoes as a serious defect 255 retailers, or 22 percent, stated that they do not handle dirty stock, and 68 others, or 6 percent, stated that dirty stock is hard to sell.

3/ Criticism of Idaho potatoes.

than 3 percent. Most of the retailers, however, were not inclined to regard it in the ordinary defect classification but 255 retailers, or about 22 percent of those interviewed, stated that they do not handle dirty stock, and 6 percent stated that they found it exceedingly difficult to dispose of such stock. Some retailers said that they were forced to wash particularly dirty lots of potatoes before they could sell them at all. Many retailers pointed out that most consumers dislike to purchase dirty potatoes and will not take them even at reduced prices if clean ones are available. Some of them indicated that the practice of washing or brushing potatoes followed by growers and shippers in many producing sections of the country has tended to increase consumer objection to potatoes that are not cleaned by brushing or washing. The general trend is for an increasing number of consumers to demand clean potatoes.

Another common complaint registered against potatoes received in Chicago the past season was the tendency of many lots to show a grayish cast after they were cooked. Consumers and retailers generally refer to such a lot as one that "cooks black." Seven percent of the retailers listed this condition as the most serious defect of potatoes this season and nearly 18 percent, listed it as the second most serious.

Another condition which many Chicago retailers listed as a serious defect of potatoes the past season was the tendency of potatoes from some sections to become mushy or watery after boiling. About 4 percent of the retailers interviewed named this condition as the most serious defect of the potatoes they offered for sale while about 12 percent reported it to be the second most serious.

Other fairly common defects of potatoes such as sunburn, second growth, growth cracks, hollow heart, scab, dry rot, soft rot, etc., were mentioned only occasionally as serious defects. No doubt many such defects were not mentioned because most of the potatoes marketed in the Chicago area are packed to meet requirements of U. S. No. 1 grade and such defects are not present in sufficient quantities as to be objectionable.

There is no appreciable difference in the ranking of the most serious defects of potatoes between the various classes of retailers or between stores in one rental area as compared with those in another. Mechanical injury was considered by the managers as the most serious defect of potatoes irrespective of class of store or type of rental area.

A discussion of the seriousness of various defects of potatoes would be incomplete without relating the various criticisms to the source of potatoes. The fact that "cooking black" is rated by retailers in general as the second most serious defect of potatoes does not mean that potatoes from all producing sections were involved. This criticism seemed to be directed more particularly to round white potatoes from Wisconsin and Michigan. It applied to a less extent to those from Minnesota and North Dakota, and occasionally to potatoes from Idaho and Colorado. Since the criticism that potatoes become watery or mushy during boiling was directed particularly at Idaho Russet and Colorado McClure potatoes, there is some evidence that consumers need to be educated in the proper methods of cooking these varieties.

The criticism of dirty potatoes was mostly directed at potatoes from Wisconsin, Minnesota, North Dakota, and Michigan. Washing and brushing potatoes in these producing districts have not yet become common and potatoes coated with

black soil, such as is found in the Red River Valley, are particularly unattractive to consumers. The contrast is especially noticeable when they are displayed next to washed or brushed potatoes from Colorado, Nebraska, and Idaho.

Mechanical injury is a defect common to potatoes from all producing sections and, therefore, no producing section escaped criticism in this respect. Under present methods of harvesting and handling potatoes in large volume from field to market it is inevitable that a certain number become cut, bruised, or broken. Some varieties, however, are more susceptible to this type of injury than others. For example, the Bliss Triumph variety has a thin, tender skin and therefore will not stand rough handling as well as the tough and thick-skinned Russet Burbank or other russeted varieties. Thus, the Chicago retailers' criticisms of potatoes showing cuts and bruises were directed especially to Nebraska Bliss Triumph potatoes. The fact that most Nebraska shippers washed their potatoes the past season made this type of injury more noticeable.

Although the Russet Burbank variety shipped from Idaho is tough-skinned it did not escape some criticism on account of mechanical injury. A large number of retailers complained that many potatoes of this variety in 100-pound sack deliveries to the stores are broken and therefore are worthless from a sales standpoint. The tough skin on this variety makes the potatoes less susceptible to bruising but their long shape makes them easier to break when handled roughly. Truckers and handlers may allow sacks to fall heavily on concrete floors of unloading platforms and warehouses, or on floors of the retail stores with the result that some tubers are broken by the impact.

Size Preference for Late-Crop Potatoes

One of the most common complaints of consumers is that the sizes of potatoes offered for sale in the retail stores are not satisfactory. Consumers' preferences vary as to the sizes preferred. Some prefer to buy potatoes of uniform, medium size, whereas others are satisfied with a range of size from small to large provided those classed as small are not too small or too numerous and those classed as large are not too large. Others would prefer to have all large ones. The purpose for which potatoes are used in the home also influences consumer demand for certain sizes. With such variations in consumer demands it is a difficult matter to determine the range in size of potatoes that is most satisfactory to the consumer on the average.

In order to get the best answer possible to the question of size preference, the retailers were asked to give the range of sizes for the round and long varieties of potatoes they found most desirable for their trade. Since it is not customary for retail-store managers to specify size of round potatoes in terms of inches in diameter and the size of long potatoes in terms of weight in ounces, they were asked to select minimum and maximum sizes of both round and long varieties that they considered most in demand by their customers. The size range of round varieties selected by the managers was then determined by measuring the diameter of each potato using size rings of various diameters. The size range of the long variety selected was determined by weighing each potato and recording the weight in ounces. The results of the determinations are summarized in tables 13 and 14.

Table 13.- Range in size of round varieties of late-crop potatoes most desirable as reported by 1,165 retailers, Chicago and suburbs, September 1939 to April 1940

Size range in inches	As reported by -						All interviewed	
	Independent		Chain-store		Voluntary			
	retailers	managers	chain-store	retailers	managers	interviewed		
	No.	Pct.	No.	Pct.	No.	Pct.		
1-7/8 to 3	:	1:	0.1:	1:	0.3:	---	2: 0.2	
1-7/8 to 3 $\frac{1}{4}$:	24:	3.4:	5:	1.5:	6:	4.4: 35: 3.0	
1-7/8 to 3 $\frac{3}{8}$:	20:	2.9:	12:	3.7:	4:	3.0: 36: 3.1	
2 to 2-3/4	:	1:	.1:	3:	.9:	---	4: .3	
2 to 3	:	19:	2.7:	16:	4.9:	4:	3.0: 39: 3.3	
2 to 3 $\frac{1}{4}$:	233:	33.2:	101:	30.9:	41:	30.4: 375: 32.2	
2 to 3 $\frac{3}{8}$:	104:	14.8:	36:	11.0:	22:	16.3: 162: 13.9	
2 to 4	:	1:	.1:	---	---	---	1: .1	
2 $\frac{1}{4}$ to 2-3/4	:	3:	.4:	4:	1.2:	---	7: .6	
2 $\frac{1}{4}$ to 3	:	62:	8.8:	49:	15.0:	18:	13.3: 129: 11.1	
2 $\frac{1}{4}$ to 3 $\frac{1}{4}$:	147:	20.9:	69:	21.1:	27:	20.0: 243: 20.9	
2 $\frac{1}{4}$ to 3 $\frac{3}{8}$:	18:	2.6:	9:	2.8:	6:	4.4: 33: 2.8	
2 $\frac{1}{2}$ to 3	:	25:	3.6:	15:	4.6:	1:	.7: 41: 3.5	
2 $\frac{1}{2}$ to 3 $\frac{1}{4}$:	---	---	---	---	2:	1.5: 2: .2	
2 $\frac{1}{2}$ to 3 $\frac{3}{8}$:	1:	.1:	---	---	---	1: .1	
2 $\frac{1}{2}$ to maximum	:	1:	.1:	---	---	---	1: .1	
Present sizing satis-:	:	:	:	:	:	:	:	
factory	:	34:	4.9:	3:	.9:	4:	3.0: 41: 3.5	
No reply	:	9:	1.3:	4:	1.2:	---	13: 1.1	
Total	:	703:	100.0:	327:	100.0:	135:	100.0: 1,165 100.0	

Only about 10 percent of the retailers of all classes, including those who said that present sizing is satisfactory, indicated a minimum size for round varieties as low as 1-7/8 inches which is the minimum size usually packed under U. S. No. 1 grade (table 13). Approximately 50 percent of the retailers placed the minimum size of round varieties that is satisfactory to consumers as 2 inches, about 35 percent placed the minimum at about 2 $\frac{1}{4}$ inches, and 4 percent placed it at 2 $\frac{1}{2}$ inches.

As to the maximum size most desirable for round varieties the range given was from $2\frac{1}{2}$ inches to 4 inches although only 1 retailer specified a maximum of over $3\frac{1}{2}$ inches. Also only 1 dealer specified a $2\frac{1}{2}$ -inch maximum size and only about 1 percent of the retailers placed the maximum desirable size at $2\frac{3}{4}$ inches. About 18 percent gave 3 inches in diameter as the maximum size most desirable for their customers, whereas slightly over 56 percent placed the maximum diameter at $3\frac{1}{4}$ inches, and about 20 percent placed it at $3\frac{1}{2}$ inches. No maximum size preference, of course, is indicated by those who stated that present sizing is satisfactory.

Table 14.-Range of size of long varieties of late-crop potatoes most desirable as reported by 1,165 retailers, Chicago and suburbs, September 1939 to Apr. 1940

Size range in ounces	As reported by -						All retailers interviewed	
	Independent retailers		Chain-store managers		Voluntary chain-store managers			
	No.	Pct.	No.	Pct.	No.	Pct.		
2 to 16	:	1:	0.1:	---	---	---	1: 0.1	
3 to 14	:	1:	.1:	---	---	---	1: .1	
3 to 16	:	2:	.3:	---	---	---	2: .2	
3 to 18	:	1:	.1:	---	---	---	1: .1	
3 to 20	:	2:	.3:	1: .3	---	---	3: .2	
3 to 24	:	1:	.1:	---	---	1: .7	2: .2	
3 to 30	:	3:	.4:	1: .3	1: .7	---	5: .4	
4 to 10	:	3:	.4:	1: .3	---	---	4: .3	
4 to 12	:	9:	1.3	2: .6	1: .7	12: 1.0		
4 to 14	:	34:	4.9	17: 5.2	5: 3.7	56: 4.8		
4 to 15	:	7:	1.0	2: .6	---	9: .8		
4 to 16	:	47:	6.7	9: 2.8	7: 5.2	63: 5.4		
4 to 18	:	18:	2.6	6: 1.8	2: 1.5	26: 2.2		
4 to 20	:	22:	3.2	9: 2.8	6: 4.4	37: 3.2		
4 to 24	:	3:	.4	2: .6	---	5: .4		
4 to 30	:	3:	.4	1: .3	1: .7	5: .4		
4 to 32	:	---	---	1: .3	---	1: .1		
4 to maximum	:	1:	.1	---	---	1: .1		
5 to 8	:	---	---	1: .3	---	1: .1		
5 to 10	:	9:	1.3	2: .6	1: .7	12: 1.0		
5 to 11	:	---	---	1: .3	---	1: .1		
5 to 12	:	31:	4.4	14: 4.3	7: 5.2	52: 4.5		
5 to 14	:	79:	11.3	39:11.9	8: 6.0	126: 10.8		
5 to 15	:	10:	1.5	1: .3	---	11: 1.0		
5 to 16	:	40:	5.7	19: 5.8	3: 2.3	62: 5.3		
5 to 18	:	4:	.6	4: 1.2	---	8: .7		
5 to 20	:	3:	.4	---	2: 1.5	5: .4		
5 to 24	:	1:	.1	---	---	1: .1		
5 to maximum	:	1:	.1	---	---	1: .1		
6 to 10	:	26:	3.7	27: 8.3	5: 3.7	58: 5.0		
6 to 11	:	1:	.1	---	---	1: .1		
6 to 12	:	104:	14.8	61:18.7	30: 22.3	195: 16.7		
6 to 14	:	96:	13.7	64:19.7	31: 23.0	191: 16.4		
6 to 15	:	2:	.3	5: 1.5	2: 1.5	9: .8		
6 to 16	:	29:	4.2	5: 1.5	2: 1.5	36: 3.1		
6 to 18	:	2:	.3	1: .3	2: 1.5	5: .4		
6 to 20	:	1:	.1	1: .3	1: .7	3: .2		
6 to 24	:	2:	.3	---	---	2: .2		
6 to maximum	:	1:	.1	---	1: .7	2: .2		
7 to 10	:	2:	.3	4: 1.2	---	6: .5		
7 to 11	:	2:	.3	1: .3	---	3: .2		
7 to 12	:	3:	.4	6: 1.8	1: .7	10: .9		
7 to 15	:	1:	.1	---	---	1: .1		
7 to 16	:	1:	.1	---	1: .7	2: .2		
7 to 18	:	1:	.1	---	---	1: .1		

Continued

Table 14.- Range of size of long varieties of late-crop potatoes most desirable as reported by 1,165 retailers, Chicago and suburbs, Sept. 1939 to Apr. 1940
 (Continued)

Size range in ounces	As reported by -						All retailers interviewed		
	Independent		Chain-store		Voluntary				
	retailers	managers	chain-store	managers	managers	managers			
8 to 10	:	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
8 to 12	:	21	3.0	8	2.5	5	3.7	34	2.9
8 to 14	:	3	.4	1	.3	---	---	4	.3
8 to 16	:	2	.3	1	.3	1	.7	4	.3
10 to 14	:	---	---	1	.3	---	---	1	.1
10 to 16	:	5	.7	---	---	1	.7	6	.5
12 to 16	:	1	.1	---	---	---	---	1	.1
Present sizing satis-	:	:	:	:	:	:	:	:	:
factory	:	29	4.2	3	.9	3	2.3	35	3.0
Do not handle	:	2	.3	---	---	---	---	2	.2
No reply	:	30	4.3	5	1.5	3	2.3	38	3.3
Total	:	703	100.0	327	100.0	135	100.0	:1,165	100.0

To sum up the opinion of the majority of the retail-store managers on the matter of sizes about 72 percent specified a range of size for round varieties of not less than 2 inches minimum to not over $3\frac{1}{4}$ inches maximum. This indicates that the bulk of the retailers consider a range of small-to-large-sized potatoes as generally satisfactory to the housewife for all-around cooking purposes. This statement needs some explanation as many retail managers pointed out that the consumer commonly prefers to have medium, or medium to large potatoes, except for certain purposes, but she is usually willing to accept a few small potatoes in a purchase. Ordinarily round potatoes were considered small if they were under $2\frac{1}{2}$ inches in diameter, medium from about $2\frac{1}{2}$ to 3 inches, and large if over 3 inches. It was pointed out by the retailers that the surest way to build up consumer dissatisfaction is to serve a customer with a lot containing mostly small potatoes except when they are purchased for special purposes, such as creaming or making potato salad. Many retailers also stated that most consumers do not like to receive too many very large potatoes in their purchases.

The size preferences of retailers for long varieties of potatoes, which are summarized in table 14, are based primarily on the Russet Burbank variety shipped from Idaho. The Russet Burbank is the only long variety offered to consumers in Chicago during the winter months, with the exception of occasional lots of Early Ohios from the Red River Valley.

The size ranges indicated as most desirable by the retailers for the long varieties of potatoes vary materially. A greater variation in desirable sizes for the Russet Burbank than for round varieties might be expected, however, owing to different uses calling for different preferable sizes. For baking in the home, consumers generally prefer a medium size from about 6 to 10 ounces because they do not take as long to bake as the very large ones and one potato of this size is usually enough to serve one person. Some consumers are satisfied to take the very large potatoes for boiling because they feel that there is less waste in preparing them. The potatoes are cut up in fairly uniform sized pieces to facilitate quick and uniform cooking. For French frying or preparing shoestring potatoes the large tubers are generally favored because they can be cut up into long pieces. Large tubers of the Russet Burbank variety are generally preferred by restaurants, hotels, and other public eating establishments for baking and because of less waste in preparation for other uses.

Analysis of the figures given in table 14 shows that slightly over 1 percent of the retailers interviewed specified a minimum of less than 4 ounces whereas about 20 percent specified a minimum of less than 5 ounces. Only about 9 percent specified a maximum desirable size of over 1 pound, and about 27 percent specified a maximum over 14 ounces. About 60 percent of the retailers specified a range within 5 ounces to 14 ounces as the most desirable size for their trade. It seems logical to conclude that the majority of retailers in the Chicago area prefer to buy Russet Burbank potatoes within this range of size. As with round varieties this range includes what is generally considered small to large, those under about 5 ounces being termed small, those from 5 to about 10 ounces as medium, and those over 10 ounces as large.

Neither the type of retail store nor the income level of the customers had any appreciable effect on the size ranges reported by retailers.

Retailers' Objections to Small Potatoes

Unfortunately a rather large percentage of individual potatoes produced in the average crop does not attain sufficient size to be termed desirable from the consumers' viewpoint. In other words, a considerable proportion of the potatoes are not large enough to be classed as anything but "small" and the average consumer would rather not have such potatoes. On the other hand, it is very difficult for the producer to discard these small potatoes from his commercial packs because to do so would often materially reduce his tonnage to be offered for sale. Also the grower is not likely to consider small potatoes as "culls," as he knows that a given weight of small potatoes represents about as much food value as the same weight of large potatoes.

Most of the potatoes grown in the United States are packed to meet the minimum size requirements of U. S. No. 1 grade which is, unless otherwise specified, 1-7/8 inches in diameter for both round and long varieties. Thus, the potatoes under 1-7/8 inches in diameter are usually sorted out and either sold separately as small potatoes or held on the farm for feeding or other purposes. However, potatoes in the commercial pack that are just over the minimum size, for example 1-7/8 inches, to about 2 $\frac{1}{4}$ inches, are still considered small by most consumers and if there are too many such small potatoes in the lots offered for sale, consumers often object strenuously to buying such lots.

In order to get an opinion on consumers' objections to small potatoes the retailers were asked if their customers object to small potatoes, having in mind of course, those under or just over 1-7/8 inches in diameter. About 45 percent of those interviewed replied that the majority of their customers object to purchasing these small potatoes unless they are to be used for some special purpose. Nearly a third of the store managers said that they had received no complaints regarding small potatoes in the lots offered for sale in their stores. Eighty retailers, or about 7 percent, said that they experienced no objection if the percentage of small potatoes in the lots offered for sale was not too large, and many seemed to think that some attention to proper mixing of small potatoes with the larger ones should be given to guard against consumer complaints. A group of 104 other retailers qualified their replies by stating that most of the consumer objections to small potatoes were directed at Russet Burbanks from Idaho, particularly those packed in consumer packages, whereas 19 said that they had experienced complaints on small red varieties. The remainder of those interviewed gave qualified answers such as no objection if stock is to be used for some special purpose, or if not priced too high, etc.

Retailers' Objections to Extra Large-Sized Potatoes

The retailers interviewed were not questioned regarding consumer objection to large-sized stock but in visiting the stores it was noted that a large proportion of them were experiencing difficulty in disposing of extra large-sized potatoes to customers who were buying for ordinary home use. Some of these stores were able to sell such stock to nearby restaurants, usually at a small discount, whereas others with no such outlets, found it necessary to lower their prices on the extra large sizes to a point that would interest customers in them in spite of a preference for medium sizes.

Extra large stock was most common in the Russet Burbank variety although a rather large quantity of oversize potatoes was found in many lots of McClures and in occasional lots of other varieties.

The principal conclusion from these interviews and observations is that there is considerable consumer dissatisfaction as to the size of potatoes offered for sale in the retail stores. Further reference to this problem will be made later in the section dealing with "Suggestions for Improving the Quality of Potatoes Offered to Consumers."

Preferences for Handling Potatoes in 100-pound Packages or in Consumer Packages

The packing of potatoes in so-called consumer packages by shippers at shipping points and receivers in the markets has been gradually increasing from year to year. From some States, for example Idaho, several thousand cars of these packages are shipped into the markets for distribution to retailers and thence to consumers in the original packages. In an effort to find out what Chicago retailers think of this method of distributing potatoes to consumers they were asked to state whether they preferred to handle potatoes in 100-pound sacks or in consumer packages and to give reasons for their preferences.

Of a total of 890 retailers answering these questions nearly three-fourths expressed a preference for handling potatoes in 100-pound packages and the remaining one-fourth said that they preferred to handle consumer packages. The outstanding reason given by the retailers preferring to handle potatoes in 100-pound sacks is that their customers wish to look at the potatoes before they buy them (table 15). They stated that a large percentage of their customers made their own selection of the potatoes they desire from open display bins. The second important reason was that the retailer can better supply the sizes of potatoes and the quantities purchased by his trade by putting up the orders in the stores from bulk stock. Consumer packages generally contain 5, 10, or 15 pounds of potatoes and, as previously shown, many consumers, particularly in the low income areas, do not purchase as many as 5 pounds of potatoes at any one time.

About 10 percent of these retailers stated that potatoes in bulk lots can be sold to consumers at a lower price than potatoes in consumer packages, and price is a big factor with many customers.

A number of retailers, as will be noted, criticised the consumer packages because of too much shrinkage, or because size and quality were not suitable or dependable.

Study of the table indicates some differences among the various classes of retailers as to their views on the question of bulk versus consumer packages in retailing potatoes. For example, more of the independent retailers than in the case of the chain-store managers stated that their average unit of sale was smaller than the units of consumer packages. It is interesting to note certain comments on this point by the voluntary chain-store managers that were not mentioned by either chain- or independent-store managers. As a whole, however, there are not any great differences in the more important reasons given by the various classes of retailers.

The most important reasons given by those retailers who expressed preference for handling potatoes in consumer packages are that these packages save time and labor in the store, are more easily handled, and there is less waste (table 16). Many also remarked that the packaged potatoes are generally cleaner than bulk stock. There were 95 retailers who said that they preferred to handle potatoes in consumer packages but gave no reasons for their opinion.

Table 15.- Reasons expressed by 630 retailers in Chicago and suburbs for preferring to handle late-crop potatoes in 100-pound sacks 1/

Reason :	As expressed by -						Total	
	Independent		Chain-store		Voluntary		Retailers	
	Retailers		Managers		Chain-store		Report-	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Customers wish to see what they are buying.....	175	41.4	68	54.0	24	29.3	267	42.4
Can supply size and amounts desired..	62	14.7	14	11.1	12	14.7	83	14.0
Price lower than for potatoes in consumer packages.....	42	10.0	16	12.7	4	4.9	62	9.8
Not familiar with consumer packages and no demand.....	34	8.1	7	5.5	14	17.1	55	8.7
Unit of sale smaller than consumer packages.....	43	10.2	1	.8	3	3.7	47	7.5
Consumer packages too high-priced and margin of profit too small.....	7	1.6	5	3.9	---	---	12	1.9
Wants to see quality served customers	10	2.4	1	.8	1	1.2	12	1.9
Shrinkage too heavy in consumer packages.....	5	1.2	3	2.4	---	---	8	1.3
Volume of business too small.....	7	1.6	---	---	3	3.7	10	1.5
Size and grade of potatoes in consumer packages not suitable to consumer...	5	1.2	---	---	1	1.2	6	1.0
Customer has more confidence in store manager's selection than in that by shipper of consumer packages.....	2	.5	4	3.2	---	---	6	1.0
Consumer-package sizes too small.....	4	.9	---	---	---	---	4	.6
Weights of consumer packages not reliable.....	3	.7	---	---	1	1.2	4	.6
Potatoes become light-burned in consumer packages.....	3	.7	---	---	---	---	3	.5
Consumer packages move too slowly....	2	.5	2	1.6	---	---	4	.6
Quality in consumer packages poor....	2	.5	1	.8	2	2.4	5	.8
More profit in handling bulk potatoes	5	1.2	1	.8	3	3.7	9	1.4
Bulk stock cleaner and easier to handle.....	3	.7	2	1.6	---	---	5	.8
No price beat-down.....	3	.7	---	---	1	1.2	4	.6
Quality more dependable.....	2	.5	---	---	2	2.4	4	.6
Demand for size of potatoes and size of package too variable.....	3	.7	---	---	1	1.2	4	.6
Consumer packages not available year around.....	---	---	---	---	2	2.4	2	.3
Bulk stock fresher.....	---	---	---	---	2	2.4	2	.3
Stock in consumer packages may be old	---	---	---	---	3	3.7	3	.5
Has market for full 100-pound sacks..	---	---	---	---	1	1.2	1	.2
Bulk stock keeps better.....	---	---	---	---	1	1.2	1	.2
Retailer prefers to prepare own packages.....	---	---	1	.8	---	---	1	.2
Gives opportunity to remove defective potatoes.....	---	---	---	---	1	1.2	1	.2
Total.....	422	100.0	126	100.0	82	100.0	630	100.0

1/ Twenty-seven additional retailers stated that they preferred to handle potatoes in 100-pound packages but gave no particular reason.

Table 16.-Reasons expressed by 138 retailers in Chicago and suburbs for preferring to handle late-crop potatoes in consumer packages 1/

Reason	As expressed by -				Total			
	Independent		Chain-store		Voluntary		Retailers	
	Retailers		Managers		Chain-store		Reporting	
							Managers	
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Save time and labor.....	3	13.1	44	40.7	---	---	47	34.1
Easier handled and less waste..	13	56.5	18	16.7	1	14.3	32	23.2
Easier handled, save time, and potatoes cleaner.....	---	---	24	22.2	3	42.8	27	19.6
Easier handled and potatoes cleaner.....	5	21.8	10	9.2	1	14.3	16	11.6
Make better display.....	---	---	3	2.8	---	---	3	2.2
Better quality and more uniform sizing.....	1	4.3	4	3.7	1	14.3	6	4.4
Save time and potatoes are graded better.....	---	---	2	1.9	---	---	2	1.4
Move more readily.....	---	---	2	1.9	---	---	2	1.4
Less loss from shrinkage.....	---	---	1	.9	1	14.3	2	1.4
More repeat sales.....	1	4.3	---	---	---	---	1	.7
Total.....	23	100.0	108	100.0	7	100.0	138	100.0

1/ Ninety-five other retailers (32 independents, 51 chain-store managers, and 12 voluntary chain-store managers) indicated preference for handling potatoes in consumer packages but gave no particular reason. Fifty-six of these indicated such a preference only if quality and size of potatoes are consistent, and 24 said that the price paid should not be too high in comparison with bulk stock.

Size of Consumer Package Preferred

Of those interviewed, there were 801 retailers who gave an opinion as to the size of consumer packages they prefer to handle. A large percentage of these dealers were not handling potatoes in consumer packages at the time of this study but many had at some time stocked them. Many answers, however, were not based on previous experience in retailing this type of package.

As shown in table 17, about 54 percent of the retailers of all classes said that they preferred the 10-pound packages. Only 13 percent indicated a preference for the 5-pound size and 9 percent for the 15-pound size. One-sixth of the stores desired both 5- and 10-pound packages and about 6 percent of the retailers stated that they should like to handle both the 10- and 15-pound sizes of packages. The $7\frac{1}{2}$ -pound size, or about a half peck, is not very popular in the Chicago area.

Table 17.- Size of consumer package preferred for potatoes by 801 retailers in Chicago and suburbs, September 1939 to April 1940

Size of package in pounds: preferred	As expressed by -						Total reporting	
	Independent retailers		Chain-store managers		Voluntary chain-store managers			
	No.	Pct.	No.	Pct.	No.	Pct.		
5.....	57	14.0	39	12.7	8	9.1	104	13.0
5 or $7\frac{1}{2}$	3	.7	---	---	---	---	3	.4
5 and/or 10.....	69	17.0	51	16.6	9	10.2	129	16.1
5 and/or 15.....	4	1.0	3	1.0	---	---	7	.9
$7\frac{1}{2}$	2	.5	---	---	---	---	2	.2
$7\frac{1}{2}$ and/or 15.....	2	.5	---	---	1	1.1	3	.4
10.....	209	51.5	166	54.1	55	62.5	430	53.7
10 and/or 15.....	19	4.7	25	8.1	4	4.6	48	6.0
15.....	41	10.1	23	7.5	11	12.5	75	9.3
Total.....	406	100.0	307	100.0	88	100.0	801	100.0

There is practically no difference in the opinions of retailers operating the different types of stores as to sizes of packages preferred.

Types of Consumer Package Preferred

Although the retailers were not requested to name a choice of material for the consumer containers there were 228 retailers who volunteered some information on this point (table 18). The open-mesh bag was suggested generally by the group, as this type of container affords both the retailer and the consumer an opportunity to inspect the size and quality of the potatoes without removing the ties at the top.

Many retailers, however, criticised the open-mesh bag because the potatoes lightburn when exposed to daylight or even to artificial light in the stores. Exposure to light for a few days causes many of the potatoes in the bags to become green. Probably most retailers are unaware that this greening seriously injures the cooking quality of the potatoes and causes excessive waste in preparing for table use. Thus, an educational campaign to the effect that potatoes packed in open-mesh bags should be stored in a dark place until needed for sales purposes might be effective. In many stores the whole supply of potatoes in

mesh bags was on display in the front of the stores, exposed to the light, even though the supply might not be sold for several days. Obviously, a large percentage of the tubers become lightburned before they can be sold. A much better practice would be for the retailer to keep his supply under cover in the back room and maintain only a small display in the front of the store. Such a practice would insure the customer's getting better quality potatoes.

Table 18.- Type of consumer package preferred for potatoes by 228 retailers in Chicago and suburbs, September 1939 to April 1940

Type of package preferred	As expressed by -						Total retailers reporting	
	Independent		Chain-store		Voluntary			
	retailers	managers	chain-store	retailers	managers	reporting		
	No.	Pct.	No.	Pct.	No.	Pct.	No.	Pct.
Cotton bag.....	4	4.0	---	---	---	---	4	1.8
White-cloth bag.....	---	---	---	---	1	4.0	1	.4
Closed sack or package....	2	2.0	5	4.9	---	---	7	3.1
Open-mesh bag.....	90	90.0	89	86.4	23	92.0	202	88.6
Open-mesh or closed bag....	2	2.0	---	---	---	---	2	.9
Box.....	---	---	1	1.0	---	---	1	.4
Paper container or closely woven cloth.....	1	1.0	---	---	---	---	1	.4
Closed paper bag.....	1	1.0	6	5.8	1	4.0	8	3.5
Double paper bag.....	1	---	2	1.9	---	---	2	.9
Total.....	100	100.0	103	100.0	25	100.0	228	100.0

It appears that if any type of consumer package is to meet with consumer acceptance generally, the size and quality of the potatoes must be uniformly standardized at all times in accordance with consumer demands. This is especially true when the potatoes are packed in containers in which the contents cannot be seen without opening the package.

Retailers' Suggestions for Improving the Quality of Potatoes Offered to Consumers

In order to get at the root of any dissatisfaction with potatoes as they now arrive at the markets the retailers were asked to give suggestions which they thought might improve the quality of potatoes offered to consumers. There were 1,001 dealers who offered one or more suggestions (table 19).

Of these suggestions there are three important ones which if put into general practice, would materially improve the quality of potatoes offered to consumers. These are: (a) cleaner potatoes, (b) better grading and more careful handling to eliminate a larger percentage of cut, bruised, and broken potatoes, and (c) more uniform sizing.

These suggestions, however, need further discussion and consideration, as the practices advocated are already in use by growers and shippers in many producing sections. Most of those who expressed preference for cleaner potatoes specified that the stock should be washed or brushed and directed their suggestions to those sections where these practices are not common such as Wisconsin, Minnesota, North Dakota, and Michigan. As will be noted, 146 retailers suggested

that the potatoes be reasonably clean but not washed. These responses came mainly from retailers whose turnover was not very rapid and they claimed that washed potatoes tend to dry out quickly and the tubers often shrivel before the stock can be sold. A considerable number also stated that washed potatoes are more susceptible to lightburn. Consequently they considered it more advantageous to stock reasonably clean, unwashed potatoes than those that had been washed.

Table 19.- Suggestions for improving the quality of late-crop potatoes offered to consumers as reported by retailers ^{1/} in Chicago and suburbs,
September 1939 to April 1940

Suggestions	As reported by -					
	Independent		Chain-store	Voluntary	Total	
	retailers	managers	chain-store	retailers	managers	reporting
	Number	Number	Number	Number	Number	Number
Clean potatoes, either washed or brushed.....	354	181	79	614		
Reasonably clean potatoes but not washed.....	103	32	11	146		
More uniform sizing.....	283	182	60	525		
Eliminate extra large potatoes from packs.....	21	5	6	32		
Eliminate cut and bruised potatoes.....	182	91	32	305		
Better grading in general..	16	8	3	27		
More careful handling.....	12	10	3	25		
Mark containers with grade designation.....	18	---	2	20		
Enforce laws against mis-branding.....	14	---	1	15		
Universal use of consumer packages.....	2	10	2	14		
Larger minimum size.....	---	3	---	3		
Ship in solid containers...	4	---	1	5		
No suggestions.....	127	22	15	164		

^{1/} Suggestions of 1,165 retailers (703 independent, 327 chain-store managers, and 135 voluntary chain-store managers). Many offered two to four suggestions.

Of the 525 retailers who suggested more uniform sizing of potatoes, most directed the suggestion to growers and shippers in all producing sections although many said that they limited their comments on this point to shippers of Idaho Russet Burbanks. As shown heretofore, medium-sized potatoes are usually preferred by consumers for general cooking and baking purposes. The percentage of small and very large potatoes that frequently is mixed with medium-sized ones seems to be greater than consumer demand. This creates a problem for the retailers, and they often have to take a loss in disposing of small and extra large potatoes. Some retailers proposed that extra large potatoes be eliminated from the commercial packs and particularly from the consumer packages. Many pointed out that the range of sizes in many consumer packages of Idaho Russets as well as some other varieties was too great and that consumers were not satisfied with such wide variations in size.

A large percentage of the retailers suggested that potatoes be sorted for size into small, medium, and large sizes before they are brought to the retail stores. A total of 62 independent and voluntary chain-store managers said that if the potatoes were sized they would pay a premium for potatoes of medium size. A number of chain-store managers also reported that they felt sure their customers would be willing to pay a premium for medium-sized potatoes.

That more cut and bruised potatoes be eliminated from the packs was suggested by most retailers as applicable to potatoes from all sections, although many stated that this type of injury was more prevalent on the red-skinned potatoes, particularly the Bliss Triumph variety. Most of the retailers seemed to appreciate the fact that, under present methods of harvesting and handling potatoes in large volume, it is too much to expect the general run of potatoes to be free from such defects. However, many ventured the opinion that this type of injury was excessive in potatoes from some sections, particularly Nebraska, and that there is considerable room for improvement in packing, grading, and handling practices. Most of the retailers also recognize that some mechanical injury takes place during transit, unloading, and handling to the retail stores, and there were 25 who suggested specifically that potatoes be handled more carefully.

The remaining suggestions of the retailers for improvement of potato quality, shown in table 19, are self-explanatory.

QUALITY OF LATE-CROP POTATOES OFFERED TO CONSUMERS

In the preceding discussion an attempt has been made to show what distribution practices are followed by retailers in the Chicago area and their preferences based on their opinion of consumer reactions for certain types, varieties, quality, and sizes of late-crop potatoes. Their opinions regarding various quality factors in the potatoes they handle from different producing sections also have been given.

In addition to getting these opinions of the store managers, analyses were made of the quality of the potatoes on hand in the stores at the time the store managers were interviewed. In order to obtain as representative a picture as possible of the quality of potatoes being offered for sale to consumers in the Chicago area, analyses were made of the potatoes in unopened 100-pound sacks and consumer packages, and of samples from display bins. During the course of the investigation 553 analyses were made of potatoes in 100-pound sacks, 622 analyses of potatoes in consumer packages, and 678 analyses of samples from display bins. In order to obtain as accurate results as possible the full contents of 100-pound sacks and consumer packages were analyzed rather than samples from the packages. In the case of bin analyses, 25-pound representative samples were taken.

The number of 100-pound sacks examined by varieties for the various States or districts of origin were as follows:

Russet Burbank - Idaho 215, Washington 1, total 216.

McClure - Colorado 111, total 111.

Bliss Triumph - Nebraska 110, North Dakota 8, Red River Valley 3, Minnesota 3, Wyoming 4, Oregon 2, Wisconsin 1, Utah 1, total 132.

Cobblers - Red River Valley 24, Minnesota 29, North Dakota 11, Michigan 1, unknown 1, total 66.

Other varieties - Michigan 8, Wisconsin 8, Minnesota 6, Idaho 2, Red River Valley 1, unknown 3, total 28.

The number of consumer packages examined by varieties for the various States, or of origin unknown, were as follows:

Russet Burbank - All believed to be from Idaho, total 334.

McClure - All believed to be from Colorado, total 70.

Bliss Triumph - Nebraska 14, North Dakota 4, Colorado 4, unknown 136, total 158.

Cobbler - Minnesota 12, unknown 16, total 28.

Green Mountain - Michigan 32, total 32.

The State or district of origin of most of the bin samples could not be positively identified, but it is believed that practically all of the Russet Burbanks were shipped from Idaho and the McClures from Colorado. Most of the Bliss Triumph potatoes originated in Nebraska, although some came from North Dakota, Minnesota, and Wyoming. Cobblers and other round white varieties originated for the most part in nearby northern producing States.

Most of the 100-pound sack analyses represented different carload lots of potatoes. In some cases there may have been some duplication as it is possible that some sacks from the same carlot were delivered to different stores which were visited on the same day. Most of the consumer-package analyses represent from 2 to 4 packages from the same lot. No doubt many bin analyses include potatoes coming out of several different carloads as it is common practice of the store managers to add to the bin supply from different lots without maintaining the identity of each.

It is believed that the analyses of 100-pound sack and consumer package lots are fairly representative of the quality and size of potatoes offered for sale to consumers during the season. Analyses were made daily throughout the season and considerable attention was given to selecting a proportional number of stores in the various rental areas to obtain a representative cross-section.

These quality analyses were made on the basis of the requirements of the U. S. Standards for potatoes which are widely used in wholesale transactions but only to a small extent in retail trading. The potatoes in each lot damaged by external defects to such an extent that they would not meet the requirements of U. S. No. 1 grade were scored. This means that each individual potato in order to meet the requirements of U. S. No. 1 grade could not have a defect which would cause a loss of over 5 percent of the total weight of the tuber in order to remove the injury, or its appearance could not be materially injured. It was not feasible to score the potatoes for internal defects, which are usually of minor importance.

Quality in 100-pound Sacks

Practically all the quality inspections of potatoes packed in 100-pound sacks were made on stock that had been packed either to meet the requirements of U. S. No. 1 grade, or which contained a high percentage of U. S. No. 1 quality.

Most of the potato receipts in Chicago are of relatively high quality and only a small volume of U. S. No. 2 potatoes are distributed in this area. Most of the Russet Burbanks from Idaho and the McClures from Colorado are packed to meet the requirements of the U. S. No. 1 grade. This is also true of a large portion of the shipments from other producing States. A considerable proportion of the Bliss Triumphs from Nebraska, and some Cobblers and other round white varieties from nearby States are packed to meet a relatively high percentage of U. S. No. 1 quality. Such stock would in most cases probably grade U. S. Commercial.

The results of the inspections of potatoes in 100-pound sacks for U. S. No. 1 grade or percentage of U. S. No. 1 quality are shown in table 20. Analyses of sacks found in independent and voluntary chain stores are included together because most of the voluntary chain-store units buy their potatoes individually in the same manner as the independent retailers.

According to the results of these inspections of the quality of potatoes delivered to the retail stores only about 55 percent of the 100-pound sacks of potatoes reach the retail stores in U. S. No. 1 condition. There was, however, an additional 26 percent of the sacks examined in which between 88 percent and 94 percent of the potatoes were U. S. No. 1 quality so far as external defects were concerned. With the exception of the Bliss Triumphs from Nebraska and some shipments of round white varieties from nearby producing States, the reasons these receipts were not U. S. No. 1 at the time of delivery to the stores were, in most cases, due to deterioration of some of the tubers in transit or to mechanical injury in handling after leaving the shipping points.

There seems to be no appreciable difference in the external quality of potatoes handled by the various classes of retailers. This, however, would be expected as most of the potatoes sent to Chicago are packed to meet U. S. No. 1 requirements, or a high percentage of U. S. No. 1 quality.

As to difference in external quality of the various varieties, there do not seem to be any material differences between Russet Burbanks, McClures, and Cobblers, but the quality of Bliss Triumphs is noticeably lower than for the other three varieties. This was principally because of the large percentage of tubers that showed damage from mechanical injury. There is no way of knowing how much of this type of damage was present at the time the potatoes were loaded at shipping points and how much occurred during the transit and unloading period. It was observed, however, that such damage consisted mostly of injuries which do not commonly occur in appreciable volume during transit and subsequent handling operations.

The quality of 100-pound sack deliveries to the retail stores located in various rental areas is shown in table 44. Considering all varieties as a whole, there is no material difference in the quality handled by the retailers in any except the lowest rental area, where the quality was highest. Although about two-thirds of the sacks examined in stores located in rental area E graded U. S. No. 1 as compared with a range of 51 to 57 percent for the sacks examined in stores located in the other rental areas, this high percentage is not regarded as representative owing to the limited varietal selection and the small number of 100-pound sacks found in the stores in rental area E. General observation by the enumerators showed that the grade of potatoes carried in stores catering to lower income groups compared favorably with the grade handled in the higher income areas but the potatoes in the stores serving the lower income groups consisted of the less popular varieties from a cooking standpoint, and although they generally contained a high percentage of U. S. No. 1 grade, they often contained a mixture of similar varieties and presented a poor appearance because of the presence of dirt in varying degrees.

Table 20.- Quality of late-crop potatoes inspected at various classes of retail stores in original 100-pound sacks in Chicago and suburbs, Sept. 1939 to Apr. 1940

Variety or type and class of store	: U.S.No.1 : 88 to 93:82 to 87:75 to 81:Under 75: Total	: U.S.No.1:except for:percent :percent :percent :percent : sacks	: soft rot :U.S.No.1:U.S.No.1:U.S.No.1:U.S.No.1:inspected	: Pct.	: No.:Pct.					
Russet Burbank				:	:	:	:	:	:	:
Independent and voluntary chain	60.0	3.0	31.0	4.0	1.0	1.0	1.0	1.0	1.0	100:100.0
Chain.....	58.6	.9	34.5	6.0	---	---	---	---	---	116:100.0
Total.....	59.2	1.8	32.9	5.1	.5	.5	.5	.5	.5	216:100.0
McClure				:	:	:	:	:	:	:
Independent and voluntary chain	67.9	---	17.0	9.4	3.8	1.9	1.9	1.9	1.9	53:100.0
Chain.....	60.4	---	20.7	8.6	8.6	1.7	1.7	1.7	1.7	58:100.0
Total.....	64.0	---	18.9	9.0	6.3	1.8	1.8	1.8	1.8	111:100.0
Bliss Triumph				:	:	:	:	:	:	:
Independent and voluntary chain	41.6	---	16.7	16.7	11.9	13.1	13.1	13.1	13.1	84:100.0
Chain.....	33.3	---	33.3	8.3	8.3	16.8	16.8	16.8	16.8	48:100.0
Total.....	38.7	---	22.7	13.6	10.6	14.4	14.4	14.4	14.4	132:100.0
Cobbler				:	:	:	:	:	:	:
Independent and voluntary chain	60.0	---	40.0	---	---	---	---	---	---	5:100.0
Chain.....	65.6	---	19.7	6.5	3.3	4.9	4.9	4.9	4.9	61:100.0
Total.....	65.2	---	21.2	6.1	3.0	4.5	4.5	4.5	4.5	66:100.0
Other varieties 1/				:	:	:	:	:	:	:
Independent and voluntary chain	35.0	---	40.0	5.0	20.0	---	---	---	---	20:100.0
Chain.....	37.5	---	25.0	12.5	25.0	---	---	---	---	8:100.0
Total.....	35.7	---	35.7	7.2	21.4	---	---	---	---	28:100.0
Total all varieties				:	:	:	:	:	:	:
Independent and voluntary chain	53.8	1.1	24.4	9.2	6.5	5.0	5.0	5.0	5.0	262:100.0
Chain.....	55.7	.3	28.2	7.2	4.5	4.1	4.1	4.1	4.1	291:100.0
Total.....	54.8	.7	26.4	8.2	5.4	4.5	4.5	4.5	4.5	553:100.0

1/Includes 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa, and Katahdin.

Quality in Consumer Packages

The results of the analyses of the quality of the potatoes in 622 consumer packages are summarized in table 21. Except for 23 packages of 15-pound size, 15 packages of 25-pound, and 4 packages of 5-pound size, all packages were the 10-pound size. Most containers were either open-mesh woven sacks or double paper bags although there were a few closed-mesh white-cotton bags. All but 29 of the packages were examined in the corporate chain stores because only a very small percentage of independent and voluntary chain stores were stocking them. All the packages of Russet Burbanks were marked with the grade designation "U. S. No. 1" except two which carried the mark "U. S. Fancy." All but 12 packages of McClures and 12 of

Cobblers were marked "U. S. No. 1" but 49 packages of Bliss Triumphs and 2 packages of Green Mountains were not marked with any grade designation. Thus, about 90 percent of the packages inspected were packed to meet at least No. 1 requirements since the packages were so marked. About 62 percent of the packages inspected contained potatoes that were up to grade requirements, although nearly 84 percent of the packages contained 88 percent or more of U. S. No. 1 quality.

The quality of the McClures seemed to carry through to the retail stores better than other varieties with 83 percent of the packages still grading U. S. No. 1 when inspected in the stores. Russet Burbank quality was lowered considerably by potatoes which were broken during handling and by lightburn which occurred when the potatoes packed in open-mesh bags were exposed to light either before or after reaching the stores. The quality of Bliss Triumphs in the consumer packages was the lowest of all varieties, just as it was in the 100-pound sacks examined. Since 49 of the 158 packages examined, however, were not marked with the U. S. No. 1 grade designation it is possible that a considerable proportion of them were not packed to meet U. S. No. 1 requirements.

Table 21.- Quality of late-crop potatoes inspected at retail stores 1/ in original consumer packages 2/ in Chicago and suburbs, September 1939 to April 1940

Variety	Total													
	: U.S.No.1 :88 to 93:		82 to 87:		75 to 81:		Under 75:		: sacks					
	:U.S.No.1:except for:		percent		percent		percent		:inspected					
	: soft rot		:U.S.No.1:	U.S.No.1:	U.S.No.1:	U.S.No.1:	U.S.No.1:	U.S.No.1:	No.:	Pct.				
Russet Burbank	:	64.1	:	0.9	:	20.0	:	7.2	:	3.6	:	4.2	:	334:100.0
McClure.....	:	82.9	:	---	:	15.7	:	1.4	:	---	:	---	:	70:100.0
Bliss Triumph.	:	50.0	:	.6	:	24.1	:	12.0	:	5.7	:	7.6	:	158:100.0
Cobbler.....	:	50.0	:	---	:	32.2	:	7.1	:	3.6	:	7.1	:	28:100.0
Green Mountain.	:	59.4	:	---	:	34.4	:	---	:	6.2	:	---	:	32:100.0
Total.....	:	61.7	:	.6	:	21.9	:	7.4	:	3.9	:	4.5	:	622:100.0

1/ Only 29 packages were analyzed in independent retail stores, the remainder in chain stores.

2/ Packages were 10-pound size except for 23 packages of 15-pound, 15 packages of 25-pound, and 4 packages of 5-pound size.

These analyses of contents of consumer packages in the retail stores indicated that in general approximately one-third of the bags did not contain potatoes which met the requirements of U. S. No. 1 grade when they finally reached the consumer.

Quality in Display Bins

The average quality of potatoes offered for sale in display bins in the retail stores is considerably lower than the quality of potatoes received in 100-pound sacks and in consumer packages (table 22). Of the 678 samples taken at random from bins only 23 percent contained potatoes that met the requirements of U. S. No. 1 grade. Most of the remaining bins contained lots of potatoes that were between 50 and 94 percent U. S. No. 1 quality although about 5 percent were below 50 percent U. S. No. 1 quality. The fact that the average quality of bin samples is considerably lower than the average quality of potatoes delivered in 100-pound sacks to the stores (table 20) does not mean that any customer who is served from the bins actually gets potatoes representative of the quality of the bins. Customers who serve themselves from bins usually select the best potatoes

Table 22.—Quality of late-crop potatoes inspected at retail stores in display bins in Chicago and suburbs, September 1939 to April 1940

Variety or type and class of store	:U.S.No.1 :88 to 93:82 to 87:75 to 81:50 to 74: Under 50 : :U.S.No.1:except for: percent: percent: percent: percent :Total inspections
class of store	soft rot:U.S.No.1:U.S.No.1:U.S.No.1:
Russet Burbank	
Independent and voluntary chain.	38.6 : 0.7 : 24.8 : 15.0 : 7.8 : 10.5 : 2.6 : 153 : 100.0
Chain.	26.7 : --- : 26.7 : 24.4 : 15.6 : 4.4 : 2.2 : 45 : 100.0
Total	35.9 : 0.5 : 25.2 : 17.2 : 9.6 : 9.1 : 2.5 : 198 : 100.0
McClure	
Independent and voluntary chain.	30.1 : 1.4 : 21.9 : 20.6 : 9.6 : 13.7 : 2.7 : 73 : 100.0
Chain.	13.8 : 10.3 : 27.6 : 24.2 : 13.8 : 10.3 : --- : 29 : 100.0
Total	25.5 : 3.9 : 23.5 : 21.6 : 10.8 : 12.7 : 2.0 : 102 : 100.0
Bliss Triumph	
Independent and voluntary chain.	20.5 : --- : 19.0 : 20.0 : 9.8 : 24.4 : 6.3 : 205 : 100.0
Chain.	7.9 : --- : 13.2 : 18.4 : 23.7 : 18.4 : 18.4 : 38 : 100.0
Total	18.5 : --- : 18.1 : 19.8 : 11.9 : 23.5 : 8.2 : 243 : 100.0
Cobbler	
Independent and voluntary chain.	13.6 : --- : 13.6 : 9.1 : 13.6 : 36.5 : 13.6 : 22 : 100.0
Chain.	2.7 : --- : 32.5 : 16.2 : 29.7 : 2.7 : 37 : 100.0
Total	6.8 : --- : 25.4 : 13.6 : 32.2 : 6.8 : 59 : 100.0
Other varieties 1/	
Independent and voluntary chain.	14.5 : --- : 27.6 : 19.7 : 15.8 : 17.1 : 5.3 : 76 : 100.0
Total all varieties	
Independent and voluntary chain.	25.9 : 4 : 22.1 : 18.2 : 10.2 : 18.3 : 4.9 : 529 : 100.0
Chain.	13.4 : 2.0 : 24.8 : 20.8 : 17.5 : 15.4 : 6.1 : 149 : 100.0
Total	23.2 : 7 : 22.7 : 18.7 : 11.8 : 17.7 : 5.2 : 678 : 100.0

and leave the U. S. No. 2's and Culls. Store clerks do not as a rule serve them with badly defective potatoes. Therefore, the average quality of potatoes taken by all consumers from the bins probably is somewhere near the average quality of the potatoes received at the stores in 100-pound sacks from which the bins are filled. Thus analyses of bin samples of potatoes do not give a representative picture of the quality received by consumers and most of the difference between the average quality of potatoes received in 100-pound sacks and the quality found in the bins at any time simply represents an accumulation of the less desirable and defective tubers (U. S. No. 2's and Culls). These defective potatoes represent those damaged in transit, or those overlooked by the sorters in the grading and packing operations for which a small tolerance is provided under requirements of U. S. standards.

It will be noted in table 22 that the percentage of bin samples that graded U. S. No. 1 is lower for those examined in corporate chain stores than for those examined in voluntary chain and independent stores; whereas the analyses of 100-pound sack lots showed no material difference in the quality handled by the various classes of retailers (table 20). That the quality of bin samples in the chain stores averaged lower than in independent and voluntary chain stores was probably largely because of the fact that customers served themselves more frequently in chain stores than in stores of the other types. Also the fact that the average chain-store turnover is greater than for voluntary or independent stores may account in some measure for a more rapid accumulation of defective stock.

It was observed that most store managers maintain the bin supply by adding to it as the supply diminishes and remove the badly defective tubers only periodically. It was further observed that store managers' practices of periodical cleaning of bins varied considerably. In stores doing a considerable volume of business, bins may be cleaned out every day or two whereas in those with a small turnover, the bins may not be reconditioned more often than every week or two. Some looked as if they had not been reconditioned at all.

No doubt many stores lost sales where the quality of potatoes in bins was allowed to become very low and it is believed that store managers could materially diminish customer complaints if they could maintain fair average quality potatoes in the bins at all times. Since badly defective potatoes must be discarded eventually, it would seem to be much better practice to discard them before filling the display bins.

Damage by Mechanical Injury in 100-pound Sacks

As indicated previously, retailers in the Chicago area rated mechanical injury as the most serious defect of potatoes because it is common to potatoes from all districts and causes more loss from waste than any other defect. That their criticism is justified is evidenced by the fact that of 553 sacks inspected less than 4 percent contained potatoes none of which was damaged by mechanical injury. The complete results of the analyses of 100-pound sack deliveries to the stores are shown by varieties in table 23. In about one-third of the sacks, considering all varieties together, 2 percent or less of the potatoes were damaged by mechanical injury while another third contained from 2 to 5 percent damaged potatoes and the remainder had over 5 percent.

Table 23.- Percent damage by mechanical injury to late-crop potatoes inspected in 100-pound sacks at retail stores in Chicago and suburbs, September 1939 to April 1940

Variety	Sacks showing -						Total sacks inspected	Pct.
	:None:	:Less than:	:Over 2:	:Over 5:	:Over 10:	:Over 20:		
	:1 to 2	:to 5	:to 10	:to 20	:	:		
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Number	
Russet Burbank..	4.2:	33.3:	38.4:	22.2:	1.9:	---	216:	100.0
McClure.....	4.5:	41.5:	27.0:	16.2:	9.0:	1.8:	111:	100.0
Bliss Triumph...	.8:	22.7:	18.9:	22.0:	26.5:	9.1:	132:	100.0
Cobbler.....	6.1:	28.8:	42.4:	16.6:	6.1:	---	66:	100.0
Other varieties 1/	3.6:	32.1:	39.3:	17.9:	7.1:	---	28:	100.0
Total.....	3.6:	31.8:	32.0:	20.1:	10.0:	2.5:	553:	100.0

1/ Includes 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa, and Katahdin.

There did not appear to be any great difference in the amount of mechanical injury to the Russet Burbank, McClure, or Cobbler varieties but in the case of the Bliss Triumph variety the sacks contained a considerably larger percentage of damaged potatoes. For example, in nearly 36 percent of the sacks of Bliss Triumphs there were over 10 percent of the tubers damaged by mechanical injury. This substantiates the retailers' reports that mechanical injury was more prevalent on this tender-skinned variety and probably warrants the suggestion that greater attention should be given to careful handling and to sorting out damaged potatoes.

Damage by Mechanical Injury in Consumer Packages

Apparently shippers of consumer packages of potatoes are more careful in sorting out tubers damaged by mechanical injury than they are when sacking 100-pound lots. The results of the inspection of 622 consumer packages show that nearly half of the packages did not contain any potatoes that would be considered damaged (table 24). Considering all varieties, about 31 percent of the packages contained 2 to 5 percent damaged tubers and only about 11 percent of the packages had from 6 to 10 percent of damaged potatoes. Eight percent of the packages contained over 10 percent of such damaged tubers.

Table 24.- Percent damage by mechanical injury to late-crop potatoes inspected in consumer packages at retail stores in Chicago and suburbs, Sept. 1939 to Apr. 1940

Variety	Packages showing -						packages inspected	Pct.
	:None:	:Less than:	:Over 2:	:Over 5:	:Over 10:	:Over 20:		
	:1 to 2	:to 5	:to 10	:to 20	:	:		
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Number	
Russet Burbank.....	56.6:	0.9:	26.3:	9.9:	6.0:	0.3:	334	:100.0
McClure.....	57.1:	---	32.9:	10.0:	---	---	70	:100.0
Bliss Triumph.....	34.2:	3.2:	36.7:	10.1:	11.4:	4.4:	158	:100.0
Cobbler.....	46.4:	3.6:	28.6:	17.8:	3.6:	---	28	:100.0
Green Mountain.....	31.2:	---	46.9:	21.9:	---	---	32	:100.0
Total.....	49.2:	1.4:	30.9:	10.9:	6.3:	1.3:	622	:100.0

As was the case with 100-pound sack deliveries to the stores, there were no significant differences in the amounts of damaged tubers in the packages of Russet Burbanks, McClures, or Cobblers, but the packages of Bliss Triumphs contained much higher percentages of damaged potatoes.

Damage by Mechanical Injury in Handling from Trackside to the
Retail Stores

An interesting phase in the distribution of potatoes is the amount of damage that occurs in handling in the city during the period beginning with unloading from the cars and ending with delivery to the retail stores. In order to get as much information as possible, mechanically damaged tubers were divided into two groups comprising: (1) those in which it was evident from the fresh nature of the injury that the damage had occurred during unloading or in delivery to stores; and (2) those in which the injury could not be classified as fresh thus assuming that it had occurred prior to unloading from the cars. The potatoes classified in each group were weighed separately for each 100-pound sack and consumer package inspected. Undoubtedly some of the injuries which could not be classified as fresh also occurred in unloading or store delivery, since a crack or break when exposed to the air oxidizes rapidly, thus giving the appearance of age.

On this basis about 60 percent of the 100-pound sacks of all varieties examined showed no evidence of damage by fresh mechanical injury and nearly one-fourth of the sacks had 1 percent or less of fresh injury but in 10 percent of them the potatoes contained from more than 1 to 2 percent fresh injury (table 25). In about 8 percent of the sacks from 2 to 5 percent of the damaged tubers could be definitely identified as damaged from the time of arrival in Chicago to delivery to the stores.

Table 25.- Percent damage by mechanical injury to late-crop potatoes packed in 100-pound sacks in handling from trackside to retail stores in Chicago and suburbs, September 1939 to April 1940

Variety	Sacks showing -								Total sacks inspected
	None: 1 or less		Over 1: to 2		Over 2: to 3		Over 3: to 4		
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	No.	Pct.
Russet Burbank..	62.5	13.9	11.6	3.2	5.6	1.8	1.4	216	100.0
McClure.....	68.5	25.2	6.3	---	---	---	---	111	100.0
Bliss Triumph...	43.9	34.9	10.6	2.3	1.5	2.3	4.5	132	100.0
Cobbler.....	59.1	28.8	10.6	---	1.5	---	---	66	100.0
Other varieties ^{1/}	67.9	21.4	7.1	---	---	3.6	---	28	100.0
Total.....	59.1	23.3	10.0	1.8	2.7	1.5	1.6	553	100.0

^{1/} Includes 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa, and Katahdin.

More Bliss Triumph potatoes than those of the other varieties were damaged during this distribution period.

Potatoes packed in consumer packages apparently can be distributed to the stores with considerably less handling damage than those packed in 100-pound sacks. As shown in table 26, from 81 percent to 97 percent of the packages, depending upon the variety, showed no fresh damage during this handling period. It seems logical that the small packages can be distributed from cars or unloading platforms to the stores with less damage to the potatoes than in the case of those packed in 100-pound sacks. Truckers and porters are not so apt to let the smaller packages fall heavily on floors as they are with the heavier packages. There was, however, a small percentage of the packages that had relatively high percentages of fresh injury. This probably was due to the packages having been dropped heavily on a hard surface.

Table 26.- Percent damage by mechanical injury to late-crop potatoes packed in consumer packages in handling from trackside to retail stores in Chicago and suburbs, September 1939 to April 1940

Variety	Packages showing -						Total packages inspected	Pct.
	:None	:Less than	:Over 2	:Over 5	:Over 10	:Over 20		
	:1 to 2	:to 5	:to 10	:to 20				
Russet Burbank...	90.7	0.3	5.7	1.8	1.2	0.3	334	100.0
McClure.....	97.2	-----	1.4	1.4	-----	-----	70	100.0
Bliss Triumph....	81.7	1.9	13.3	2.5	---	0.6	158	100.0
Cobbler.....	96.4	---	3.6	---	---	---	28	100.0
Green Mountain...	81.2	---	---	9.4	9.4	---	32	100.0
Total.....	88.9	6	6.6	2.3	1.3	.3	622	100.0

It is significant that fresh handling damage to Bliss Triumph and Green Mountains packed in consumer packages is greater than for the other varieties. However, it is difficult to understand why tubers of the Green Mountain variety should receive any more injury than Cobblers or McClures.

It is apparent from the foregoing that damage to potatoes as a result of handling in the city and hauling to retail stores is considerable and probably is greater than necessary. It is conceivable that some of this damage might be reduced if managers of distributing agencies could thoroughly impress on their employees the importance of careful handling of packages of potatoes.

Handling Damage to Russet Burbank Potatoes

Since it was found that a large percentage of the 100-pound sacks of Russet Burbanks arrived in the stores containing a number of broken potatoes, separate records of the quantities of such damaged tubers were kept for each sack.

It is not the practice to put broken potatoes in sacks at shipping points, so such damage occurred after packing at some time during the period of loading, transportation, unloading, or handling to the retail stores. The percentage of potatoes that were broken during handling from shipping points to retail stores, not including the fresh injury, is shown in table 27.

Table 27.- Percentages 1/ of broken potatoes found in 100-pound sacks of Russet Burbank potatoes inspected at retail stores in Chicago and suburbs, September 1939 to April 1940

Item	Sacks showing -						Total	Pct.
	:None	:Less than	:Over 1	:Over 2	:Over 3	:Over 5		
	:1 to 1	:to 2	:to 3	:to 5	:to 7	:to 10	:to 10	
Broken potatoes	40.3	16.2	13.9	8.8	12.9	3.7	2.8	1.4
							216	100.0

1/ The percentages do not include the percentages of fresh injury as shown for the packages of this variety in table 24.

As will be noted, 60 percent of 216 sacks examined contained broken potatoes ranging by weight from less than 1 percent to more than 10 percent. Actually, there were 370 pounds of broken potatoes in the 216 sacks, an average of about 1.7 percent per sack. This, of course, is in addition to the fresh injury given

Table 28. - Cleanliness of late-crop potatoes inspected at retail stores in 100-pound sacks in Chicago and suburbs, September 1939 to April 1940

Potatoes in sacks -										Total sacks inspected	
Variety and class	Clean	Fairly clean	Slightly dirty								
of store											
Independent and voluntary chain	44.0	38.0	16.0	2.0	---	---	---	---	---	100	100.0
Chain.	43.1	33.6	12.9	7.8	---	---	---	---	---	116	100.0
Total	43.6	35.6	14.4	5.1	---	---	---	---	---	216	100.0
McClure											
Independent and voluntary chain	98.1	---	1.9	---	---	---	---	---	---	53	100.0
Chain.	88.0	1.7	5.2	1.7	1.7	1.7	1.7	1.7	1.7	58	100.0
Total	92.8	.9	3.6	.9	.9	---	---	---	---	111	100.0
Bliss Triumph											
Independent and voluntary chain	77.3	11.9	2.4	3.6	---	1.2	2.4	1.2	2.4	84	100.0
Chain.	62.5	20.8	6.3	8.3	---	---	2.1	---	2.1	48	100.0
Total	72.0	15.2	3.8	5.3	---	---	7	2.3	7	132	100.0
Cobbler											
Independent and voluntary chain	---	20.0	---	20.0	---	---	---	---	---	5	100.0
Chain.	18.1	24.6	8.2	34.4	---	14.9	9.8	---	9.8	61	100.0
Total	16.7	24.2	7.6	37.9	---	4.5	9.1	---	9.1	66	100.0
Other varieties 1/											
Independent and voluntary chain	5.0	40.0	40.0	5.0	---	5.0	5.0	---	5.0	20	100.0
Chain.	37.5	25.0	12.5	25.0	---	---	---	---	---	8	100.0
Total	14.3	35.7	32.1	10.7	---	3.6	3.6	---	3.6	28	100.0
Total all varieties:	55.5	22.4	9.8	8.5	.2	1.1	2.3	.2	.2	553	100.0

1/ Includes 13 sacks of Rurp 1 types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa, and Katahdin.

for the Russet Burbank variety in table 24, which averaged 0.7 percent per sack, thus making a total average loss from this cause of approximately 2.5 pounds for each 100-pound sack.

Such a high percentage of potatoes broken during the handling from shipping points to the retail stores suggests that the distributing agencies need to study this problem in order to find effective means of reducing it.

Cleanness of Potatoes

On the assumption that the appearance of 100-pound sack lots of late potatoes inspected in the Chicago retail stores is representative of the market, Colorado potato shippers furnished the cleanest potatoes to Chicago consumers the past season. Out of 111 sacks inspected, 93 percent contained clean potatoes which, according to requirements of United States standards, means practically free from dirt (table 28). Bliss Triumphs, most of which were from Nebraska, were the next cleanest with about 72 percent of the sacks containing clean potatoes, and Idaho Russet Burbanks followed with about 44 percent. Cobblers from nearby northern producing States presented the poorest appearance, with only about 17 percent being classed as clean (table 28). Nearly 38 percent of the sacks of Cobblers inspected contained potatoes that were classed as fairly clean to slightly dirty as compared with only a small percentage of the varieties from other States being so classed. This supports the retailers' complaints of having to buy too many dirty potatoes of the Cobbler variety.

The factor of cleanness of the potatoes packed in 622 consumer packages inspected is summarized in table 29. All the packages of the Colorado McClures were found to contain clean potatoes, whereas 68 percent of the packages of Bliss Triumphs and about 74 percent of the Russet Burbanks also were packed with clean potatoes. Here again Cobblers fell down in appearance with only about 18 percent of the packages showing clean potatoes.

Table 29.- Cleanness of late-crop potatoes inspected at retail stores in consumer packages in Chicago and suburbs, September 1939 to April 1940

Variety	Potatoes in packages -						Total inspections
	Clean		Fairly clean	Fairly clean	Slightly dirty	Dirty	
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	
Russet Burbank	73.7	17.0	5.4	2.7	1.2	---	334:100.0
McClure.....	100.0	---	---	---	---	---	70:100.0
Bliss Triumph.	68.4	10.1	8.9	12.6	---	---	158:100.0
Cobbler.....	17.8	7.1	21.5	42.9	3.6	7.1	28:100.0
Green Mountain	100.0	---	---	---	---	---	32:100.0
Total.....	74.1	12.1	6.1	6.6	.8	.3	622:100.0

The relative cleanness of the samples taken from 678 display bins is given in table 30. The percentages given for the various varieties classed as of a certain degree of cleanness do not differ materially from those shown for the cleanness of potatoes in 100-pound sacks although a larger percentage of the bins of Russets contained clean potatoes. No doubt some dirt was removed when the potatoes were transferred from the sacks to the bins and by customers in handling them while making their selection.

Table 30.- Cleanliness of late-crop potatoes inspected at retail stores in display bins in Chicago and suburbs, September 1939 to April 1940

Variety and class		Clean:Fairly clean:			Slightly dirty:			Dirty:			Total inspections			
of store	in bins	to clean	clean	clean	slightly	slightly	dirty	dirty	dirty	dirty	dirty	Number	Pct.	
Russet Burbank		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Number	Pct.	
Independent and voluntary chain	72.5: 61.4:	20.3: 22.3:	5.2: 4.4:	1.3: 8.9:	---	---	0.7	---	---	---	---	153	100.0	
Chain.	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	45	100.0	
Total	• • •	70.7: 93.2:	20.7: 3.4:	5.1: 7.8:	3.0: 7.8:	---	---	---	---	---	---	196	100.0	
McClure		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	• •	• •	
Independent and voluntary chain	84.9: 63.2:	9.6: 13.2:	4.1: 13.2:	1.4: 7.9:	---	---	---	---	---	---	---	73	100.0	
Chain.	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	29	100.0	
Total	• • •	87.3: 76.1:	7.8: 13.2:	3.9: 4.1:	1.0: 2.1:	---	---	---	---	---	---	102	100.0	
Bliss Triumph		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	• •	• •	
Independent and voluntary chain	78.5: 63.2:	13.2: 13.2:	3.4: 7.9:	1.0: 7.9:	---	---	1.0	2.6	2.6	2.6	2.6	205	100.0	
Chain.	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	38	100.0	
Total	• • •	76.1: 17.0:	13.2: 3.4:	4.1: 2.0:	2.1: 20.3:	---	---	1.2	1.2	1.2	1.2	243	100.0	
Cobbler		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	• •	• •	
Independent and voluntary chain	45.5: 5.4:	18.2: 16.2:	4.6: 2.7:	13.6: 24.3:	---	---	4.5	13.5	37.9	37.9	37.9	22	100.0	
Chain.	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	• • •	37	100.0	
Total	• • •	20.3: 23.7:	17.0: 50.0:	3.4: 19.7:	20.3: 4.0:	---	---	10.2	27.1	27.1	27.1	27.1	59	100.0
Other varieties 1/		Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	• •	• •	
Independent and voluntary chain	65.5: 65.5:	19.0: 19.0:	6.0: 6.0:	4.0: 4.0:	---	---	2.6	2.6	2.6	2.6	2.6	76	100.0	
Total all varieties	• • •	65.5: 65.5:	19.0: 19.0:	6.0: 6.0:	4.0: 4.0:	---	---	2.6	2.6	2.6	2.6	2.6	76	100.0

1/ Includes inspections from 45 bins of Rural types, 22 of unidentified round white varieties, 6 Katahdin, 2 Green Mountain, and 1 Early Ohio.

Soft Rot or Wet Breakdown in Retail Receipts

Loss from potatoes on account of soft rot or wet breakdown by the time they are received in the retail stores is not very great according to the results of analyses of 100-pound sacks, consumer packages, and bin samples. Eighty-two percent of the 100-pound sacks, 96 percent of the consumer packages, and 93 percent of the samples from bins contained potatoes that were free from soft rot or wet breakdown (table 31).

As will be noted, the percentage of 100-pound packages having tubers affected with soft rot was slightly higher than for those so affected in consumer packages and in bin samples. This, however, would seem to be logical as probably more care was given to the packing of consumer packages and some decayed tubers were probably eliminated from 100-pound sack lots as they were emptied into the bins.

Although the analyses show that some varieties had more decayed tubers than others, it is doubtful whether the differences are of any significance.

Table 31.—Percentage of soft rot or wet breakdown in packages and bins of late-crop potatoes inspected at retail stores in Chicago and suburbs, September 1939 to April 1940

Variety and type of package	:None:	Less than:	Over 1:	Over 2:	Over 3:	Over 5:		
	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	No.:	Pct.:
100-pound sacks	:	:	:	:	:	:	:	:
Russet Burbank.....	:84.3:	10.2	:3.7	:1.4	---	0.4	216	100.0
McClure.....	:73.9:	18.9	:3.6	.9	1.8	.9	111	100.0
Bliss Triumph.....	:86.3:	10.6	.8	1.5	.8	---	132	100.0
Cobbler.....	:75.8:	24.2	---	---	---	---	66	100.0
Other varieties 1/...	:92.9:	7.1	---	---	---	---	28	100.0
Total.....	:82.1:	13.6	:2.4	:1.1	.5	.3	553	100.0
Consumer packages	:	:	:	:	:	:	:	:
Russet Burbank.....	:95.8:	---	.3	1.2	1.5	1.2	334	100.0
McClure.....	:98.6:	---	---	.4	---	---	70	100.0
Bliss Triumph.....	:94.9:	1.3	1.3	1.9	.6	---	158	100.0
Cobbler.....	:100.0:	---	---	---	---	---	28	100.0
Green Mountain.....	:96.9:	---	3.1	---	---	---	32	100.0
Total.....	:96.2:	.3	.6	1.3	1.0	.6	622	100.0
Bin samples	:	:	:	:	:	:	:	:
Russet Burbank.....	:96.0:	.5	1.5	---	.5	1.5	198	100.0
McClure.....	:85.4:	5.9	2.9	2.9	2.9	---	102	100.0
Bliss Triumph.....	:97.1:	2.1	.8	---	---	---	243	100.0
Cobbler.....	:81.4:	13.5	1.7	1.7	1.7	---	59	100.0
Other varieties 2/...	:94.8:	1.3	1.3	---	2.6	---	76	100.0
Total.....	:93.4:	3.1	1.5	.6	1.0	.4	678	100.0

1/ Includes 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa and Katahdin.

2/ Includes samples from 45 bins of round types, 22 of unidentified round white varieties, 6 Katahdin, 2 Green Mountain, and 1 Early Ohio.

Size of Potatoes Offered for Sale

Because it was known that one of the chief reasons for consumer dissatisfaction was too many small potatoes, particular attention was given to the factor of size in the analyses of potatoes found in the retail stores. The potatoes in each 100-pound sack, consumer package, and bin were separated into four different size classifications and the percentage coming within each size range was calculated. The four classifications were (1) those potatoes under 1-7/8 inches, (2) those 1-7/8 inches to $2\frac{1}{4}$ inches in diameter in the case of round varieties and those 1-7/8 inches in diameter to 6 ounces in weight in the case of long varieties (Russet Burbank and Early Ohio), (3) those $2\frac{1}{4}$ to 3 inches in diameter in the case of round varieties and those 6 ounces to 10 ounces in weight in the case of long varieties, and (4) those over 3 inches in diameter in the case of round varieties and those over 10 ounces in weight in the case of long varieties.

The minimum size of 1-7/8 inches was used in the first classification because it is the minimum size specified in U. S. No. 1 grade and potatoes are generally sized for market to this minimum except in some sections, particularly Idaho and Colorado, where some shippers use 2 inches as the minimum for sizing potatoes. Even larger minimum sizes are used to fill special orders for certain sizes by some shippers. Two and one-fourth inches for round varieties and 6 ounces for long varieties were used as the division in the next classification for two reasons. First, a lot of round potatoes in order to meet the requirements of Size A according to United States standards, must have at least 60 percent $2\frac{1}{4}$ inches or larger in diameter and a lot of long potatoes must have at least 40 percent 6 ounces or larger in weight. Secondly, these are about the sizes which the average consumer considers the border line between small- and medium-sized potatoes. The classifications $2\frac{1}{4}$ to 3 inches for round varieties and 6 to 10 ounces for long varieties were used because potatoes within this range are generally considered as medium size. Over 3 inches in diameter for round varieties and over 10 ounces in weight for long varieties were used as the minimum for the fourth classification because potatoes above these sizes are usually considered as large.

It is interesting, therefore, to examine the sizes of potatoes in the lots offered for sale in the Chicago retail stores the past season, keeping in mind that retailers' and consumers' principal objection was too many small potatoes.

First, an analysis of the lots inspected with reference to Size A seems to be the first step, as this definitely separates the lots in which the majority of the potatoes are small from the lots that usually contain a range of size from small to large but with enough medium-and large-sized tubers to give the lot a fairly good appearance. However, the fact that a lot of potatoes meets the minimum requirements of Size A does not mean that such a lot is always satisfactory to buyers. The requirements for Size A classification in the United States standards do not provide this assurance. Such requirements were added to the standards in 1933 to enable buyers to protect themselves from receiving lots of potatoes all of which are just over the minimum size of 1-7/8 inches. Such a lot meets the requirements of U. S. No. 1 for size but with the additional specifications of Size A in a contract of purchase the buyer can expect to receive lots of round varieties of potatoes with at least 60 percent over $2\frac{1}{4}$ inches in diameter or lots of long varieties with at least 40 percent over 6 ounces in weight. Whether a lot meeting the requirements of Size A is satisfactory to buyers generally depends upon the

size of the potatoes that are required to be above $2\frac{1}{2}$ inches in diameter or 6 ounces in weight, respectively. If the potatoes are barely above these sizes the chances are the lot will not be considered satisfactory; whereas, if they range in size from medium to large, the chances are much better that buyers will consider the lot generally acceptable for size.

The percentage of packages and samples from bins of potatoes inspected in the stores that met the requirements for Size A classification are shown by varieties in table 32. In the 100-pound sack lots, nearly 98 percent of the 550 sacks inspected met the requirements of Size A, which indicates that this is not a difficult requirement to meet.

Table 32.- Percentages of packages and samples from bins of late-crop potatoes inspected at retail stores in Chicago and suburbs, that met requirements of Size A

Variety	Potatoes in		Potatoes in		Potatoes in	
	100-pound sacks		consumer packages		bin samples	
	: Size A : No.:	: Not Size A : No.:	: Size A : No.:	: Not Size A : No.:	: Size A : No.:	: Not Size A : No.:
Russet Burbank...	:213: 99.1:	2: 0.9:	:290: 86.8:	44: 13.2:	:181: 91.4:	17: 8.6
McClure.....	:111:100.0:	---:	---: 69:	98.6:	1: 1.4:	96: 94.1:
Bliss Triumph....	:127: 97.7:	3:	2.3:110:	76.4:	34: 23.6:	211: 87.9:
Cobbler.....	: 64: 97.0:	2:	3.0: 27:	96.4:	1: 3.6:	51: 87.9:
Green Mountain....	---	---	---	32:100.0:	---	---
Other varieties 1/	: 22: 78.6:	6: 21.4:	---	---	60: 78.9:	16: 21.1
Total.....	:537: 97.6:	13: 2.4:	:528: 86.8:	80: 13.2:	:599: 88.9:	.75: 11.1

1/ In 100-pound sacks, "other varieties" include 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa, and Katahdin. In bin samples, "other varieties" include samples from 45 bins of round types, 22 of unidentified round white varieties, 6 Katahdin, 2 Green Mountain, and 1 Early Chic.

Study of the size of potatoes in consumer packages tells a different story, however, as out of 608 packages examined the potatoes in 80 packages, or about 13 percent, failed to meet requirements of Size A. Most of these packages were of the Russet Burbank and Bliss Triumph varieties. Analyses of these packages help to explain why 104 retailers, who were asked if consumers object to small potatoes, replied that there was considerable objection to Russet Burbanks particularly those packed in consumer packages, and why 19 retailers said they had received complaints on small red potatoes.

The majority of consumers who purchased the packages of potatoes that did not meet the requirements of Size A and other packages from the same lots, undoubtedly were not satisfied with their purchases. Such packages contained mostly small potatoes and the practice of packing consumer packages with this small stock unquestionably has retarded the sale of potatoes in consumer packages to a great extent and is partly responsible for retailers' statements that they prefer to handle potatoes in 100-pound sacks because customers want to see the size and quality of stock that they purchase.

The average crop of Russet Burbank potatoes produced in Idaho easily meets the requirements of Size A. The fact that such a large percentage of the consumer packages contained small potatoes was no doubt due to the removal of the larger potatoes from field-run lots to fill special orders for "bakers" thus leaving the smaller ones to be packed in consumer packages. This is a practice which is not conducive to repeat orders. It was pointed out by many retailers that shippers should pack consumer packages only with medium-sized potatoes if they are to expect favorable consumer reaction to this type of package.

The analyses of the size of the potatoes sampled from bins are not important, but it will be noted in table 32 that 11 percent of the bins sampled did not contain potatoes that would meet requirements of Size A. Since bins are filled from 100-pound sack lots, analyses of sizes of potatoes in bins, if made before any potatoes were removed, should be about the same as found in 100-pound sacks. The bins were sampled just as they were found at the time the store was visited and the analyses simply show the tendency of customers to select the medium to large potatoes and to allow the small-sized tubers to accumulate in the bins.

Summarizing the average size of the potatoes in 100-pound sacks examined through the season, it will be noted that the percentage of undersized potatoes (those under 1-7/8 inches) is almost negligible, averaging only 0.2 percent for all varieties (table 33). An interesting fact resulting from this analysis is the percentage (20.7) of Russet Burbank potatoes that were under 6 ounces in weight, and the percentage (16.1) of round varieties that were under $2\frac{1}{4}$ inches in diameter. These percentages roughly represent what consumers generally regard as small potatoes and which they prefer not to purchase except for a few special purposes.

Table 33.—Average size of late-crop potatoes packed in 100-pound sacks found in retail stores in Chicago and suburbs, September 1939 to April 1940

Variety	Number : Under 1-7/8 : Over $2\frac{1}{4}$: Over 3 :					
	: of sacks	: to $2\frac{1}{4}$ inches	: to 3 inches	: inches	: Total	:
	: Percent	: Percent	: Percent	: Percent	: Percent	: Percent
McClure.....	111	---	9.9	67.6	22.5	100.0
Bliss Triumph.....	128	0.3	18.6	64.7	16.4	100.0
Cobbler.....	66	.6	18.5	64.1	16.8	100.0
Other varieties 1/.....	26	.4	24.3	62.3	13.0	100.0
Total or weighted average	331	.2	16.1	65.4	18.3	100.0
		: Under 1-7/8 : Over 6 :	Over 10:			
		: 1-7/8 : inches : to 10	: ounces:			
		: inches : to 6 : ounces	:			
		: : ounces:	:			
		: Percent	: Percent	: Percent	: Percent	
Russet Burbank.....	214	0.1	20.7	56.7	22.5	100.0

1/ Includes 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Chippewa and Katahdin.

The average size of late-crop, round varieties of potatoes packed in consumer packages was slightly smaller than those packed in 100-pound sacks (table 34). The percentage of medium-sized potatoes averaged about the same for both types of containers but the percentage of tubers over 3 inches in diameter averaged about 8 percent less in consumer packages than in 100-pound sacks. There was also about 5 percent more potatoes from 1-7/8 to $2\frac{1}{4}$ inches in consumer packages than in 100-pound sacks.

Table 34.-- Average size of late-crop potatoes packed in 10-pound consumer packages found in retail stores in Chicago and suburbs, September 1939 to April 1940

Variety	Number of packages						Under 1-7/8 inches			Over 2 ¹ / ₄ inches			Over 3 inches			Total
	: Number of packages		: Under 1-7/8 inches		: to 2 ¹ / ₂ inches		: to 3 inches		: inches		: inches		: inches			
	: Percent		: Percent		: Percent		: Percent		: Percent		: Percent		: Percent			
McClure.....	: 62	: ---	: 11.3	: 66.8	: 21.9	: 100.0										
Bliss Triumph.....	: 137	: 0.7	: 28.8	: 65.5	: 5.0	: 100.0										
Cobbler.....	: 24	: .1	: 18.5	: 67.5	: 13.9	: 100.0										
Green Mountain.....	: 30	: .1	: 21.3	: 72.0	: 6.6	: 100.0										
Total or weighted average..	: 253	: .4	: 22.6	: 66.8	: 10.2	: 100.0										
							: Under 1-7/8 inches	: Over 6 inches	: Over 10	: 10	: 10	: 10	: 10	: 10		
							: to 6 ounces	: to 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces		
							: 6 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces	: 10 ounces		
							: Percent	: Percent	: Percent	: Percent	: Percent	: Percent	: Percent	: Percent		
Russet Burbank.....	: 324	: .2	: 36.1	: 53.8	: 9.9	: 100.0										

For the Russet Burbank variety the average size of potatoes packed in consumer packages was considerably smaller than for potatoes packed in 100-pound sacks, the latter having about 12 percent more potatoes over 10 ounces in weight and about 15 percent less potatoes from 1-7/8 inches in diameter to 6 ounces in weight.

From the viewpoint of consumer desirability, the average size of round varieties of potatoes packed in consumer packages was fairly satisfactory. The average size for Russet Burbanks generally meets consumer approval as far as maximum size is concerned, but the average of 35 percent of potatoes under 6 ounces in weight indicates that the packages contained a considerably larger proportion of small potatoes than consumers generally like to have. Packages of any variety that do not generally prove satisfactory to consumers are those packed with either a high percentage of small potatoes or those that contain a high percentage of extra large tubers.

Net Weight of Potatoes in Consumer Packages

Consumers who trade in serve-yourself stores often experience considerable difficulty in trying to weigh out an exact number of pounds of certain commodities that are sold by weight. Such consumers can appreciate the problem of shippers and receivers who prepare consumer packages of potatoes in large volume and specify them of a certain net weight.

Analyses of consumer packages furnished an excellent opportunity to check the net weights of potatoes in the packages. Based on the packages examined it was found that the consumer who makes a practice of buying consumer packages of potatoes gets packages that on the average are up to or over the net weight marked on them. As shown in table 35 nearly 30 percent of the packages contained the exact net weight of potatoes as marked on the package, while almost one-half of them contained from 1/8 of a pound to over 5/8 of a pound more than the specified weights. Considering all varieties, only about 22 percent of the packages were underweight. This does not mean, however, that all these packages were underweight when packed as no doubt the natural shrinkage in moisture content after the time of packing caused many of the potatoes to weigh less than when packed. The results indicate that usually the consumers get full weight and possibly a little more when they purchase potatoes in the consumer packages.

Table 35.—Net weight of late-crop potatoes in 10-pound consumer packages inspected at retail stores in Chicago and suburbs, September 1939 to April 1940

Variety	Packages:			Total:			underweight:			Total:			Total:			
	weighing: 10 lb.	1/8: 1/4:	3/8: 1/2:	5/8: packages	1/8: 1/4:	3/8: 1/2:	5/8: packages	1/8: 1/4:	3/8: 1/2:	5/8: packages	1/8: 1/4:	3/8: 1/2:	5/8: packages	1/8: 1/4:	3/8: 1/2:	5/8: packages
net	:	:	:	1b.: 1b.	or : net or :	or : net or :	over :	more : over :	more : over :	more : over :	more : net :	more : net :	more : net :	more : net :	more : net :	more : net :
Burrs	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:	Pct.:
Busset Burbank	29.2	13.5:14.2:	8.0: 6.1:	14.0:	75.0	10.8:	4.9:	2.2:	4.9:	25.0	325	100.0				
McClure	14.5	9.7:16.1:	27.4:11.3:	16.1:	95.1	3.3:	1.6:	---	---	---	62	100.0				
Bliss Triumph	32.9	17.8:15.7:	5.7: 3.6:	---	75.7	8.6:	8.6:	2.1:	4.3:	7:	24.3	140	100.0			
Cobbler	25.0	20.9:12.5:	8.3: 8.3:	---	75.0	12.5:	4.2:	8.3:	---	25.0	24	100.0				
Green Mountain	50.1	15.6:15.6:	---	3.1:	84.4	12.5:	---	---	3.1:	15.6	32	100.0				
Total	29.5	14.6:14.8:	9.1:	6.0:	3.9:	77.9	9.6:	5.1:	2.1:	2.4:	2.9:	22.1	583	100.0		

SUMMARY

During the late-potato marketing season from September 1939 to April 1940, 1,165 retailers (703 independent, 327 chain store, and 135 voluntary chain-store managers) were interviewed in Chicago and 30 suburbs concerning trade practices, preferences and objections to certain qualities in potatoes for the purpose of obtaining information that might be helpful in improving the quality of potatoes offered to consumers and in bringing about general improvement in marketing methods. The quality and size of potatoes found in 100-pound sacks, consumer packages, and bins were determined on the basis of United States standards at the time the stores were visited.

Chain store organizations supply their stores largely from potatoes purchased in carlots directly from shippers through their own organizations or through subsidiary or other corporations. Voluntary chain stores, most of which buy independently, and independent retailers obtain most of their supplies through Chicago carlot receivers. About 53 percent of these retail managers interviewed, reported that they ordered their supplies by telephone through wholesalers in whom they placed confidence. Most of the remaining retailers said they or one of their representatives personally inspected at one of the wholesale markets the potatoes they intend to purchase, and some reported that they bought directly from trucking jobbers or peddlers.

Only about a fourth of the independent and voluntary chain-store managers interviewed reported that they made it a general practice to check weights of potatoes upon receipt at the store, about 17 percent said they were occasionally checked, and the remainder stated that they accepted the wholesalers weights without checking.

Results of interviews showed that somewhat over half of all retailers in the Chicago area sell not to exceed 10 sacks of 100-pounds per week with about a fourth of the total handling from 1 to 5 sacks and the remainder 6 to 10 sacks per week. The average chain store sells more potatoes than most independent or voluntary chain stores.

Most of the potatoes packed in consumer packages are distributed through corporate chain stores. About 52 percent of the chain stores were found to be stocking potatoes in consumer packages, whereas only 4 percent of the independent and 10 percent of the voluntary chain stores were carrying them. Out of 1,165 retailers interviewed 19 percent reported that they discontinued stocking potatoes in consumer packages because quality and size were not dependable, the price was too high, consumers preferred to see what they were buying, or because of various other reasons.

About 84 percent of the retailers interviewed reported that the predominating method of serving customers consisted of a clerk preparing the order in the presence of the customer while about 11 percent said that packages were prepared previous to the customer's entry. Only about 3 percent reported that the predominating method consisted of customers' serving themselves. Of all chain-store managers, 6.4 percent said that they served most customers with consumer packages of potatoes prepared by shippers or receivers.

With the exception of occasional sales of potatoes in 50- or 100-pound lots, practically all retail sales in the Chicago area are in units of from 1 to 15 pounds. Most chain and voluntary chain store sales are in units of 5, 10, or 15 pounds. Only about a third of the independent store managers gave one or more of these units as the predominating size of purchase while the remainder reported all sorts of other sizes and combinations of sizes. Many retailers in the low income areas reported the predominating unit of sale in their stores to be 3 pounds or less.

Slightly more than half of the retailers interviewed reported that they made a practice of discounting prices on lots of undesirable sized potatoes or lots of badly defective stock. Probably the average percentage of total receipts sold at discount in the Chicago area does not exceed 2 or 3 percent.

Losses from decayed or other badly defective tubers that have to be thrown away were reported by various retailers to be from none to more than 25 percent, although 83 percent estimated such losses to be from less than 1 percent to 5 percent.

Retailers in the Chicago area expressed a decided preference for the red-skinned Colorado McClures and Nebraska Bliss Triumphs for general cooking purposes the past season while Idaho Russet Burbanks were an almost unanimous choice for baking potatoes. Nebraska Bliss Triumphs enjoyed a great increase in popularity the past season owing to excellent color and cooking quality and the fact that the majority of shippers washed or brushed the stock before shipment. Colorado McClures lost prestige owing to poor color of many lots, cooking quality below average of former years, and a larger percentage of them having undesirable shape.

Varietal preference of retailers for potatoes was not generally expressed in terms of correct varietal names but in terms of State of origin or color of the skin.

Mechanical injury was named as the most serious defect of potatoes by the majority of retailers because it is most common and causes more waste than any other defect. "Dirty" was listed as the next most serious complaint against potatoes, particularly those from nearby northern producing States. Another common complaint was that many lots "cooked black." Retailers also said that many consumers complained that Russet Burbanks and McClures had a tendency to become mushy when cooked, which suggests the need of educating consumers in the proper methods of cooking these varieties. Such defects as sunburn, second growth, growth cracks, hollow heart, scab, etc. were seldom mentioned by retailers as serious defects, probably because most lots of potatoes are packed to meet requirements of U. S. No. 1 grade and such defects are not present in sufficient quantities as to be objectionable.

Retailers reported that the majority of consumers prefer medium-sized or medium to large-sized potatoes both for baking and for general cooking purposes. Round potatoes between 2-1/4 to 3-1/4 inches in diameter for general cooking purposes and Russet Burbanks for baking between 6 and 10 ounces in weight were reported to be most desirable. Many retailers stated that most consumers did not object to a few small-sized potatoes in their purchases but often complained if the percentage of small potatoes was high. Many also said that consumers objected to extra large-sized potatoes in purchases of Russet Burbank or McClure varieties. A large percentage of retailers strongly advocated that growers and shippers size potatoes more uniformly and suggested small, medium, and large classifications.

Nearly three-fourths of the retailers interviewed expressed preference for handling potatoes in 100-pound sacks rather than in consumer packages principally because so many consumers wish to see the potatoes which they intend to purchase, the retailer can better supply the quality, size and amounts desired and they can be sold cheaper. Those who expressed preference for handling potatoes in consumer packages gave as reasons that they save time, labor, are more easily handled and there is less waste.

Over half of 801 retailers interviewed with reference to size of consumer packages that they preferred expressed preference for handling potatoes in 10-pound packages. The open-mesh bag was stated to be the preferred type of container by the majority of retailers.

Retailers' suggestions that would materially improve the general quality of potatoes offered to consumers if put into effect are briefly: cleaner potatoes, more uniform sizing, and better grading with more careful handling to eliminate a larger percentage of cut, bruised, and broken potatoes.

In order to obtain as representative a picture as possible of the quality of potatoes offered to consumers in the Chicago area the past season, analyses of the potatoes were made in 553 100-pound sack lots, 622 consumer packages, and 678 display bins.

Potatoes in about 55 percent of the 100-pound sacks examined in the retail stores met the requirements of U. S. No. 1 grade and an additional 26 percent of the sacks contained from 88 percent to 93 percent U. S. No. 1 quality potatoes. The quality of Bliss Triumphs was noticeably lower than that of Russet Burbanks, McClures, and Cobblers. General observation showed that stores located in the low income areas handled on the average a grade of potatoes that compared favorably with those handled by stores located in the higher income areas but the potatoes usually consisted of the less popular varieties from a cooking standpoint and often contained a mixture of varieties and presented a poor appearance because of the presence of dirt in varying degrees.

About 90 percent of the consumer packages examined were marked "U. S. No. 1," but only about 62 percent actually reached the stores with potatoes up to grade requirements although 84 percent contained potatoes that were 88 percent or more U. S. No. 1 quality.

Results of analyses of samples from 678 display bins showed that there was an average of only 23 percent of the samples from bins which contained U. S. No. 1 potatoes at the time of inspection. This average is considerably below the average of the quality of 100-pound sacks from which bins are filled, which fact indicates a large percentage of U. S. No. 2 and Cull potatoes are allowed to accumulate in the bins.

Only about 4 percent of the 100-pound sacks examined contained potatoes, none of which were damaged by mechanical injury. Approximately 64 percent of the sacks contained from less than 1 to 5 percent and the remainder over 5 percent of such damage. Consumer packages of potatoes inspected contained less damage by mechanical injury than 100-pound sacks; nearly half of such packages had no damaged tubers. Bliss Triumphs showed more of such damage than other varieties in both types of containers.

As evidenced by freshness of injury, about 41 percent of the 100-pound sacks of potatoes showed handling damage in delivery to the retail stores ranging from less than 1 percent to over 5 percent; the remainder showed no increase in such damage. On the average, consumer packages showed much less handling damage to the potatoes than those in 100-pound sacks probably because truckers and handlers did not allow the smaller packages to fall heavily on floors.

The long shape of Russet Burbank potatoes makes them particularly susceptible to breaking when handled roughly. Out of 216 100-pound sacks examined, there was an average of 2.5 pounds of broken potatoes in each sack upon arrival at the retail stores.

Soft rot or wet breakdown was not an important factor in retail store receipts of potatoes as is evidenced by the fact that 82 percent of the 100-pound sacks, 96 percent of the consumer packages, and 93 percent of the samples from bins contained potatoes that were free from such injury.

From the standpoint of appearance, McClures were the cleanest potatoes delivered to Chicago retailers during the past season followed in order by Bliss Triumphs, Russet Burbanks, and Cobblers. There was no material difference in the cleanliness of potatoes handled by the various classes of retailers.

The size of the potatoes in all packages and samples examined in the retail stores was determined. About 98 percent of the potatoes in 100-pound sacks, 87 percent in consumer packages, and 89 percent in bin samples met the requirements of Size A classification as specified in the United States standards. The amount of Russet Burbank potatoes in 100-pound sacks that were under 6 ounces in weight and of round varieties under 2-1/4 inches in diameter averaged 20.7 percent and 16.1 percent respectively. Such potatoes are generally classed as small by consumers and they prefer not to purchase them except for special purposes. The quantity of medium sized potatoes of round varieties in consumer packages averaged about the same as that in 100-pound sacks but there were about 8 percent less tubers over 3 inches in diameter and 5 percent more from 1-7/8 to 2-1/4 inches in diameter. Consumer packages of the Russet Burbank variety had an average of 35 percent of tubers under 6 ounces in weight indicating a considerably higher percentage of small potatoes than was desirable from the consumer standpoint.

Consumers in Chicago who purchase consumer packages of potatoes periodically get more packages overweight than underweight as is evidenced by the fact that only about 22 percent of the packages examined were underweight, whereas 48 percent contained from 1/8 to more than 5/8 pound excess weight and 30 percent contained the exact net weight of potatoes marked on the package.

RECOMMENDATIONS

In considering the results of the survey as a whole, certain outstanding suggestions, criticisms, and observations were made which may be helpful in improving the quality of potatoes offered to consumers and generally improving marketing methods. It will be noted that most of the objections are more or less controllable factors and it, therefore, seems worth while to summarize them briefly from the standpoint of the industry as a whole and for each principal producing State.

From the standpoint of the industry as a whole, probably the most important objection voiced by retailers is that present methods of sizing are not satisfactory. As will be recalled, nearly half of the retailers interviewed suggested that potatoes packed for sale by growers and by shippers be more uniformly sized and many expressed preference for small, medium, and large classifications. There is no doubt that if growers and shippers of some of the most popular varieties throughout the United States generally adopted the practice of sizing potatoes in this manner, it would meet with wholehearted approval from retailers and consumers, at least in large consuming centers. On the other hand, it would create additional problems.

If growers and shippers sorted their potatoes into various size classifications, it is not known whether consumers would be willing to pay enough premium for the medium and large-sized lots to compensate for the losses that growers and shippers might sustain on the small potatoes. However, many retailers stated that consumers would have no objections to paying slightly higher prices for desirable sizes and a few retailers were sizing stock in the stores and applying appropriate prices accordingly.

Adoption of a program of sizing potatoes into various size classifications would materially increase costs as new sizing machinery would have to be installed in large volume. Most of the present sizing equipment is adequate only for sorting out undersized potatoes.

Thus, the problem of sizing potatoes to meet the desires of consumers is not a simple one and the practice of sorting potatoes into various uniformly sized classifications will probably develop gradually as new uses are found for small potatoes and as experience demonstrates that such a practice will adequately compensate growers and shippers for the increased costs in grading and packing. At present, many shippers from some sections, particularly Idaho and Colorado, make a practice of filling orders for special sized stock and no doubt the practice will become more widespread as consumers demonstrate their willingness to pay higher prices for such stock.

In addition to the above points which affect potato quality at the source of production, analyses of samples and observations suggest improved practices at the receiving and distributing ends.

The material increase in the percentage of mechanical injury to potatoes in handling from cars to retail stores suggests that wholesalers, distributing agencies, and retailers should instruct their employees and insist upon more careful handling of potato supplies.

The low average quality of potatoes found in display bins suggests that a large percentage of retailers could eliminate many consumer complaints by discarding badly defective tubers before refilling the bins and by more frequent reconditioning of the displays.

Retailers' complaints that potatoes in open-mesh packages lightburn, suggests that they should display only a few packages at a time and keep the bulk of the supply under cover until needed.

From the standpoint of individual producing States the following observations are given:

Idaho

In general, Russet Burbanks were very well received by Chicago consumers and enjoyed almost unanimous choice for baking. Many criticisms, however, that potatoes of this variety when boiled become mushy suggests need of consumer education in proper methods of cooking.

Serious objection to sizes offered to consumers suggests that growers and shippers could materially decrease consumer complaints by giving more attention to this factor. The practice of sorting medium to large-size potatoes from field-run stock and packing the small ones in consumer packages has no doubt materially retarded the volume of movement in this type of package as has also the practice of packing a range of size from small to very large in such packages. Also objection to extra large-sized potatoes in 100-pound sack lots offered for general consumption suggests that better retailer-consumer satisfaction could be obtained if this stock were sorted and sacked separately for restaurant and hotel trade.

Criticism of the consumer-size open-mesh bag because it makes the potatoes susceptible to lightburn and the observation that many retailers keep a large supply exposed to light in the stores, suggests the need of educating retailers to display only a small number of such packages at any one time and to keep the bulk of the supply under cover in a cool place.

Colorado

McClures enjoyed the reputation of being the cleanest potatoes offered to consumers in Chicago the past season but lost prestige because of below average cooking quality, color, and shape; factors mostly beyond the control of growers or shippers.

Retailers' objections to many lots showing excessive damage by mechanical injury suggest more careful harvesting and handling practices on the part of growers and shippers.

Sorting and packing separately extra-large sized potatoes would materially reduce retailer and consumer complaints of 100-pound sack lots offered for sale through retailers.

Nebraska

Nebraska shipments of well-colored, clean Bliss Triumphs were first choice for general cooking purposes the past season.

They were the most criticised, however, and analyses showed that they contained more potatoes damaged by mechanical injury than any other variety. This criticism suggests that growers and shippers need to give more attention to careful handling in their harvesting and packing operations of this tender-skinned variety.

North Dakota and Minnesota

Potatoes from these States were found to be comparatively well graded but less dependable in cooking quality and much poorer in appearance than potatoes in general from the Western States. The retailers' criticisms and consumers' objections to dirty potatoes suggests that growers and shippers in these States must give attention to this factor if they are to compete with western shippers, a large percentage of whom have installed washing or brushing equipment in their warehouses.

Wisconsin and Michigan

The fact that so few retailers in Chicago were carrying potatoes from these States is evidence that their popularity has declined seriously in recent years.

The principal reasons given for the nonpopularity of Wisconsin potatoes were undependable cooking quality, varietal mixtures, unsatisfactory grading and poor appearance; while the principal objections to Michigan stock were undependable cooking quality and poor appearance. These reasons suggest that growers and shippers in those States should give serious attention to such criticisms if they are to regain lost prestige in one of the country's largest markets.

APPENDIX TABLES

Table 36.—Number of 100-pound lots of late-crop potatoes used per week as reported by 1,165 retailers in Chicago and suburbs, September 1939 to April 1940

Table 37.—Number of consumer packages of late-crop potatoes sold per week as reported by 1,165 retailers in Chicago and suburbs, September 1939 to April 1940

Number of packages handled	Independent retailers					Chain-store managers					Voluntary chain-store managers				
	Rental area					Rental area					Rental area				
	A : Fct.	B : Fct.	C : Fct.	D : Fct.	E : Fct.	A : Fct.	B : Fct.	C : Fct.	D : Fct.	E : Fct.	A : Fct.	B : Fct.	C : Fct.	D : Fct.	E : Fct.
5 to 10	---	---	3:	---	---	4.9:	---	1.8:	---	---	4.8:	---	4.8:	---	---
11 to 20	1.7:	---	.7:	---	---	4.9:	2.4:	7.1:	3.7:	---	4.8:	---	4.8:	---	---
21 to 30	---	---	---	---	---	2.4:	3.2:	3.1:	7.4:	---	4.8:	2.3:	2.0:	---	---
31 to 40	---	---	---	---	---	---	2.4:	3.1:	3.7:	---	---	---	---	---	---
41 to 50	---	---	---	---	---	4.9:	4.0:	6.1:	3.7:	---	---	---	---	---	---
51 to 60	3.5:	---	---	---	---	2.4:	1.6:	1.0:	---	---	---	---	---	---	---
61 to 70	---	---	---	---	---	---	4.0:	3.1:	---	4.0:	---	---	---	---	---
71 to 80	---	---	---	---	---	---	4.0:	1.0:	1.8:	---	4.0:	---	---	---	---
81 to 90	---	---	---	---	---	2.4:	1.6:	1.0:	---	---	4.0:	---	---	---	---
91 to 100	---	1.0:	---	---	---	---	3.2:	3.1:	---	3.2:	---	4.8:	---	---	---
101 to 125	---	---	---	---	---	2.4:	1.8:	4.1:	1.8:	---	4.1:	---	4.8:	---	---
126 to 150	---	1.0:	---	---	---	4.9:	3.2:	1.0:	---	---	4.8:	---	4.8:	---	---
151 to 200	---	---	---	---	---	4.9:	4.8:	1.0:	1.8:	---	4.8:	---	4.8:	---	---
201 to 250	---	---	---	---	---	2.4:	1.8:	5.1:	1.0:	---	5.1:	---	5.1:	---	---
251 to 300	---	---	---	---	---	2.4:	1.8:	5.1:	1.0:	---	5.1:	---	5.1:	---	---
301 to 400	---	---	---	---	---	2.4:	1.8:	5.1:	1.0:	---	5.1:	---	5.1:	---	---
401 to 500	---	---	---	---	---	2.4:	1.8:	5.1:	1.0:	---	5.1:	---	5.1:	---	---
501 to 600	---	---	---	---	---	2.4:	1.8:	5.1:	1.0:	---	5.1:	---	5.1:	---	---
Handle but no reply to volume	8.8:	5.1:	1.4:	1.1:	4.1:	9.8:	21.6:	16.3:	11.1:	---	14.2:	11.6:	2.0:	---	---
Formerly handled but discontinued	24.6:	24.2:	17.4:	10.0:	1.4:	9.8:	15.2:	29.6:	37.3:	33.3:	38.1:	44.2:	26.6:	16.7:	25.0
Never handled	61.4:	66.7:	79.2:	86.7:	90.4:	36.7:	23.2:	12.3:	24.1:	66.7:	33.3:	41.9:	67.4:	83.3:	75.0
No reply	---	2.0:	1.0:	2.2:	4.1:	2.4:	2.4:	1.0:	1.8:	---	2.0:	---	2.0:	---	---
Total	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0:	100.0

1] Mostly 10-pound, some 15-, and 5-pound packages.

Table 38.- Preference expressed for late-crop potatoes from various States by 703 independent retail-store managers, Chicago and suburbs, September 1939 to April 1940

		For general cooking purposes			Preference expressed for potatoes from -			For baking purposes			Preference expressed for potatoes from -			
Rental Number	Area inter-viewed	Colo.	Nebr.	Minn.	Wis.	N.	Idaho	Mich.	No State	No	No	Idaho	Colo.	No
A	57	25	32	33	—	—	—	—	10	—	—	100	—	—
B	99	35	21	29	—	—	—	1	1	—	—	100	—	—
C	293	35	30	20	—	—	—	2	—	—	—	99	—	—
D	181	34	20	14	1	3	1	4	3	14	3	96	1	1
E	73	14	12	8	1	12	—	11	8	10	17	7	74	1
Total	703	32	24	19	—	3	1	3	2	11	3	2	96	—
													1	3

Table 39.- Preferences expressed for late-crop potatoes from various States by 327 chain-store managers,
Chicago and suburbs, September 1939 to April 1940

		For general cooking purposes		Preference expressed for potatoes from -		For baking purposes	
Area viewed:	Number:	Colo.	Nebr.	Idaho	Mich.	No State	No expressed: reply
A	41	51	20	17	---	---	5
B	125	38	14	23	4	2	5
C	98	43	11	19	9	2	10
D	54	37	11	9	11	1	1
E	9	22	---	22	11	---	5
Total	327	41	13	18	5	3	99
							1

Table 40.- Preferences expressed for late-crop potatoes from various States by 135 voluntary
chain-store managers, Chicago and suburbs, September 1939 to April 1940

Rental Number	For general cooking purposes			For baking purposes		
	Preference expressed for potatoes from -			Preference: No expressed: pref-:		
	Colo.	Nebr.	Idaho	Minn.	Wis.	No reply
A	21	42	24	24	5	100
B	43	42	16	21	9	100
C	49	41	23	14	3	100
D	18	28	17	17	2	100
E	4	25	25	11	12	96
Total	135	39	20	18	1	98

Area viewed	Preference expressed for potatoes from -			Preference: No expressed: pref-:		
	and	Nebr.	Idaho	named but: pref-	for pota-:	er-:
				prefer	er-	er-
				red	ence	ence
				potatoes	Idaho	Idaho

Table 41.- Preference for late-crop potatoes by varieties or types by 703 independent retailers, Chicago and suburbs, September 1939 to April 1940

Variety or type	Rental area A			Rental area B			Rental area C		
	First :Second: Third			First :Second: Third			First :Second: Third		
	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice
	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.
Red potatoes	: 96	: ---	: ---	: 93	: 5	: ---	: 84	: 10	: 1
Russet Burbank	: ---	: 1/ 96	: ---	: 6	: 2/93	: ---	: 9	: 3/ 86	: 5
Round White	: ---	: ---	: 26	: ---	: ---	: 48	: 2	: 2	: 59
Cobbler	: ---	: ---	: ---	: ---	: ---	: ---	: 1	: 1	: 3
McClure	: ---	: ---	: ---	: ---	: ---	: ---	: 2	: ---	: ---
Bliss Triumph	: ---	: ---	: ---	: ---	: ---	: ---	: 1	: ---	: ---
No reply	: 4	: 4	: 74	: 1	: 2	: 52	: 1	: 1	: 32
Total	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100
	Rental area D			Rental area E			Total all areas		
	First :Second: Third			First :Second: Third			First :Second: Third		
	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice
	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.
Red potatoes	: 68	: 22	: 3	: 26	: 36	: 15	: 76	: 14	: 3
Russet Burbank	: 11	: 4/ 68	: 18	: 8	: 5/37	: 27	: 8	: 78	: 9
Round White	: 16	: 5	: 43	: 63	: 7	: 17	: 11	: 3	: 46
Cobbler	: 1	: 1	: 2	: ---	: ---	: 1	: 1	: 1	: 2
McClure	: 4	: ---	: ---	: 3	: ---	: ---	: 2	: ---	: ---
Bliss Triumph	: ---	: 1	: ---	: ---	: ---	: ---	: 1	: ---	: ---
No reply	: ---	: 3	: 34	: ---	: 20	: 40	: 1	: 4	: 40
Total	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100

- 1/ Although here noted as second choice 4 percent of the retailers rated Russet Burbanks even with red potatoes.
- 2/ Although here noted as second choice 11 percent of the retailers rated Russet Burbanks even with red potatoes.
- 3/ Although here noted as second choice 6 percent of the retailers rated Russet Burbanks even with red potatoes.
- 4/ Although here noted as second choice 12 percent of the retailers rated Russet Burbanks even with red potatoes, and 2 percent rated them even with McClures.
- 5/ Although here noted as second choice 10 percent of the retailers rated Russet Burbanks even with red potatoes.

Table 42.- Preferences for late-crop potatoes by varieties or types by 327 chain-store managers, Chicago and suburbs, September 1939 to April 1940

Variety or type	Rental area A			Rental area B			Rental area C		
	First :Second: Third			First :Second: Third			First:Second:Third		
	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice
Red potatoes	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.
Red potatoes	: 73	: 10	: ---	: 57	: 16	: 10	: 54	: 24	: 10
Russet Burbank	: 10	: 1/ 84	: 5	: 21	: 2/ 66	: 10	: 18	: 3/ 64	: 14
Round White	: ---	: 2	: 56	: 6	: 3	: 36	: 9	: 2	: 52
Cobbler	: 5	: ---	: 12	: 5	: 3	: 14	: 11	: 1	: 6
McClure	: 7	: 2	: 7	: 10	: 5	: 2	: 4	: 3	: 1
Bliss Triumph	: 5	: ---	: ---	: 1	: 6	: 2	: 1	: 3	: 1
No reply	: ---	: 2	: 20	: ---	: 1	: 26	: 3	: 3	: 16
Total	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100
	Rental area D			Rental area E			Total all areas		
	First :Second: Third			First :Second: Third			First:Second:Third		
	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice	:choice
Red potatoes	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.
Red potatoes	: 26	: 31	: 24	: ---	: 22	: 45	: 52	: 20	: 12
Russet Burbank	: 20	: 4/ 52	: 24	: ---	: 67	: 11	: 18	: 65	: 12
Round White	: 35	: 5	: 35	: 33	: ---	: ---	: 12	: 3	: 42
Cobbler	: 15	: 4	: 4	: 56	: ---	: ---	: 10	: 2	: 10
McClure	: 2	: 4	: 7	: ---	: ---	: 11	: 6	: 4	: 4
Bliss Triumph	: ---	: 2	: 2	: ---	: ---	: ---	: 1	: 4	: 1
No reply	: 2	: 2	: 4	: 11	: 11	: 33	: 1	: 2	: 19
Total	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100	: 100

- 1/ Although here noted as second choice 12 percent of the retailers rated Russet Burbanks even with red potatoes.
- 2/ Although here noted as second choice 12 percent of the retailers rated Russet Burbanks even with red potatoes.
- 3/ Although here noted as second choice 16 percent of the retailers rated Russet Burbanks even with red potatoes.
- 4/ Although here noted as second choice 4 percent of the retailers rated Russet Burbanks even with red potatoes.

Table 43.- Preference for late-crop potatoes by varieties or types by 135 voluntary chain-store managers, Chicago and suburbs, September 1939 to April 1940

Variety or type	Rental area A			Rental area B			Rental area C		
	First : Second : Third			First : Second : Third			First : Second : Third		
	choice	choice	choice	choice	choice	choice	choice	choice	choice
	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.
Red potatoes	72	---	---	84	2	---	74	14	---
Russet Burbank	14	90	---	2	1/ 84	14	18	2/ 76	4
Round White	---	---	9	2	2	42	2	2	35
Cobbler	---	---	5	---	2	---	---	2	2
McClure	14	10	---	12	2	---	6	2	2
Bliss Triumph	---	---	---	---	8	5	---	2	6
No reply	---	---	86	---	---	39	---	2	51
Total	100	100	100	100	100	100	100	100	100
	Rental area D			Rental area E			Total all areas		
	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.	: Pct.
Red potatoes	44	27	---	25	50	---	71	11	---
Russet Burbank	17	3/ 39	45	---	---	50	12	73	13
Round White	17	6	33	75	25	---	6	3	32
Cobbler	---	---	---	---	---	---	---	2	2
McClure	22	6	---	---	25	---	11	4	1
Bliss Triumph	---	22	---	---	---	25	---	6	4
No reply	---	---	22	---	---	25	---	1	48
Total	100	100	100	100	100	100	100	100	100

1/ Although here noted as second choice 12 percent of the retailers rated Russet Burbanks even with red potatoes.

2/ Although here noted as second choice 6 percent of the retailers rated Russet Burbanks even with red potatoes.

3/ Although here noted as second choice 11 percent of the retailers rated Russet Burbanks even with red potatoes.

Table 44.- Quality of late-crop potatoes inspected at retail stores in various rental areas in original 100-pound sacks in Chicago and suburbs, September 1939 to April 1940.

Variety or type:	U.S.No.1 :88 to 93:82 to 87:75 to 81:Under '75:							
and rental area:	U.S.No.1:except for: percent: percent: percent: percent: Total soft rot :U.S.No.1:U.S.No.1:U.S.No.1:U.S.No.1:							
	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	Pct.	No.: Pct.
Russet Burbank	:	:	:	:	:	:	:	:
A	: 60.5	: ---	: 34.2	: 5.3	: ---	: ---	: ---	: 38:100.0
B	: 56.1	: 3.0	: 36.4	: 4.5	: ---	: ---	: ---	: 66:100.0
C	: 63.3	: 2.2	: 26.7	: 5.6	: 1.1	: 1.1	: ---	: 90:100.0
D	: 45.0	: ---	: 50.0	: 5.0	: ---	: ---	: ---	: 20:100.0
E	: 100.0	: ---	: ---	: ---	: ---	: ---	: ---	: 2:100.0
Total	: 59.2	: 1.8	: 32.9	: 5.1	: .5	: .5	: 216	: 100.0
McClure	:	:	:	:	:	:	:	:
A	: 63.2	: ---	: 21.0	: 5.3	: 10.5	: ---	: ---	: 19:100.0
B	: 48.2	: ---	: 22.2	: 18.5	: 7.4	: 3.7	: ---	: 27:100.0
C	: 62.0	: ---	: 22.0	: 8.0	: 6.0	: 2.0	: ---	: 50:100.0
D	: 100.0	: ---	: ---	: ---	: ---	: ---	: ---	: 15:100.0
E	: ---	: ---	: ---	: ---	: ---	: ---	: ---	: ---
Total	: 64.0	: ---	: 18.9	: 9.0	: 6.3	: 1.8	: 111	: 100.0
Bliss Triumph	:	:	:	:	:	:	:	:
A	: 44.0	: ---	: 12.0	: 28.0	: 12.0	: 4.0	: ---	: 25:100.0
B	: 35.7	: ---	: 26.2	: 7.1	: 11.9	: 19.1	: ---	: 42:100.0
C	: 38.1	: ---	: 19.0	: 14.3	: 11.9	: 16.7	: ---	: 42:100.0
D	: 36.4	: ---	: 36.4	: 9.1	: 4.5	: 13.6	: ---	: 22:100.0
E	: 100.0	: ---	: ---	: ---	: ---	: ---	: ---	: 1:100.0
Total	: 38.7	: ---	: 22.7	: 13.6	: 10.6	: 14.4	: 132	: 100.0
Cobbler	:	:	:	:	:	:	:	:
A	: 50.0	: ---	: ---	: ---	: ---	: 50.0	: ---	: 2:100.0
B	: 73.1	: ---	: 7.7	: 7.7	: 3.8	: 7.7	: ---	: 26:100.0
C	: 63.1	: ---	: 31.6	: ---	: 5.3	: ---	: ---	: 19:100.0
D	: 63.6	: ---	: 27.3	: 9.1	: ---	: ---	: ---	: 11:100.0
E	: 50.0	: ---	: 37.5	: 12.5	: ---	: ---	: ---	: 8:100.0
Total	: 65.2	: ---	: 21.2	: 6.1	: 3.0	: 4.5	: 66	: 100.0
Other varieties 1/	:	:	:	:	:	:	:	:
A	: ---	: ---	: 66.7	: 33.3	: ---	: ---	: ---	: 3:100.0
B	: 20.0	: ---	: 20.0	: 20.0	: 40.0	: ---	: ---	: 5:100.0
C	: 46.1	: ---	: 38.5	: ---	: 15.4	: ---	: ---	: 13:100.0
D	: 33.4	: ---	: 33.3	: ---	: 33.3	: ---	: ---	: 6:100.0
E	: 100.0	: ---	: ---	: ---	: ---	: ---	: ---	: 1:100.0
Total	: 35.7	: ---	: 35.7	: 7.2	: 21.4	: ---	: ---	: 28:100.0
Total all varieties	:	:	:	:	:	:	:	:
A	: 54.0	: ---	: 25.3	: 12.6	: 5.8	: 2.3	: ---	: 87:100.0
B	: 51.2	: 1.2	: 26.5	: 8.5	: 6.0	: 6.6	: 166	: 100.0
C	: 57.0	: 1.0	: 25.2	: 7.0	: 5.6	: 4.2	: 214	: 100.0
D	: 55.5	: ---	: 31.1	: 5.4	: 4.0	: 4.0	: 74	: 100.0
E	: 66.7	: ---	: 25.0	: 8.3	: ---	: ---	: 12	: 100.0
Total	: 54.8	: .7	: 26.4	: 8.2	: 5.4	: 4.5	: 553	: 100.0

1/ Includes 13 sacks of Rural types, 9 sacks of unidentified round white varieties, and 2 sacks each of Early Ohio, Chippewa, and Katahdin.